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CLEVELAND, OHIO, JANUARY 9, 1896.

NO. 2

LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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ANNUAL MEETING.

The annual meeting of the Lake Carriers' Association will be held at the Russell House, Detroit, Wednesday and Thursday, January 15 and 16.

DRY DOCK ASSOCIATION ANNUAL.

The next annual meeting of The Dry Dock Association of the Lakes will be held at Detroit on Thursday, January 16, 1896, Russell House.

HAMILTON J. MILLS,
Secretary.

MARINE RECORD Life Savers' Series.

CAPT. HARRISON MILLER.

(SEE ILLUSTRATION.)

Capt. Harrison Miller is certainly a veteran in the service of the government, having been in the life-saving service ever since its establishment on the Great Lakes, and having served eleven years prior to this in the light-house work. He is now keeper of the Point Betsey (Point au Bec Scies) life-saving station, near Frankfort, Mich., and stands very high on the records.

Capt. Miller was born in New York State in 1838, and when about 11 years old removed with his parents to Michigan, where they settled on Beaver Island, Lake Michigan, which was then occupied by King Strang and his followers. Since this time he has never lived outside Michigan, nor has he dwelt so far from the water that he could not throw a stone into the lake. From the time he was big enough to handle gill nets he engaged in fishing, and, as he grew older, in boat-building. He was appointed to the charge of Beaver Island light in 1863, when he was 25 years old, and continued to act as light keeper for eleven years. In 1876 Capt. Harris was appointed to the command of the Beaver Island Life-saving crew, this being one of the first stations on Lake Michigan. He remained in charge of this station until 1876, when he was transferred to his



CAPT. HARRISON MILLER.

present command. Capt. Harris has had a great deal of experience, but is very modest withal. After giving the above data in response to a request for a sketch of his life, he says: "This is my nineteenth year in the service. During this time I have been to a number of wrecks, accounts of all of which appear in the records of the service. Have always been successful at every wreck attended. I have had some narrow escapes, but have always come out all O. K., either by good judgment or by the providence of God—who shall say which? I am now fifty-seven years of age, still hale and hearty, and expect to remain in the service a number of years yet, or until the government pensions the old vets or tuns us out to grass as the farmer does his old horse."

SHIP MASTERS' ASSOCIATION.

GRAND LODGE MEETING.

The Grand Lodge of the Ship Masters' Association will meet at the Effitt House, Washington, January 21. Those who expect to attend are requested to notify Grand Secretary W. A. Collier, of Cleveland, if they have not already done so.

PORT HURON ELECTION.

Port Huron Lodge No. 2, S. M. A., installed its officers on Jan. 4, as follows: President, W. E. Rice; first vice president, H. Zealand; second vice president, W. G. Pierce; treasurer, H. Davis; financial and recording secretary, M. A. Budd. The appointed officers are: D. M. Sinclair, chaplain; O. J. Holmes, marshal; Byron Brown, warden; and L. Carey, sentinel.

BUFFALO QUARTERS REMOVED.

Buffalo Lodge of S. M. A., has removed its quarters to No. 55 Main street. Officers for the year are as follows. President, Frank J. McCabe; first vice president, Patrick O'Neil; second vice president, A. E. Huff; treasurer, Alex Clark; secretary, John Perew.

CLEVELAND LODGE.

At last Friday's meeting of Cleveland Lodge No. 4, of the Ship Masters' Association, President C. E. Benham installed its officers. The appointive offices were filled as follows: Chaplain, Capt. Toland; marshal, Capt. Nelson; warden, Capt. Woodford; sentinel, Capt. McNally. Capts. C. E. Benham, W. S. Mack and J. A. Holmes will represent as delegates the Cleveland lodge at the Grand Lodge, which will meet in Washington on the 23d inst., but about thirty members will attend from Cleveland.

IMPROVEMENTS AT LORAIN.

Besides the six ore hoists for which the Johnson Company of Lorain has placed an order, the Cleveland, Lorain & Wheeling Railroad Co. is arranging to construct six more hoists at its dock near the mouth of the Black River, this doubling the capacity of its dock for the coming season. The increase in ore consumption along the line of this railroad, with the consumption of the new Lorain blast furnaces, will possibly treble Lorain receipts for next season.

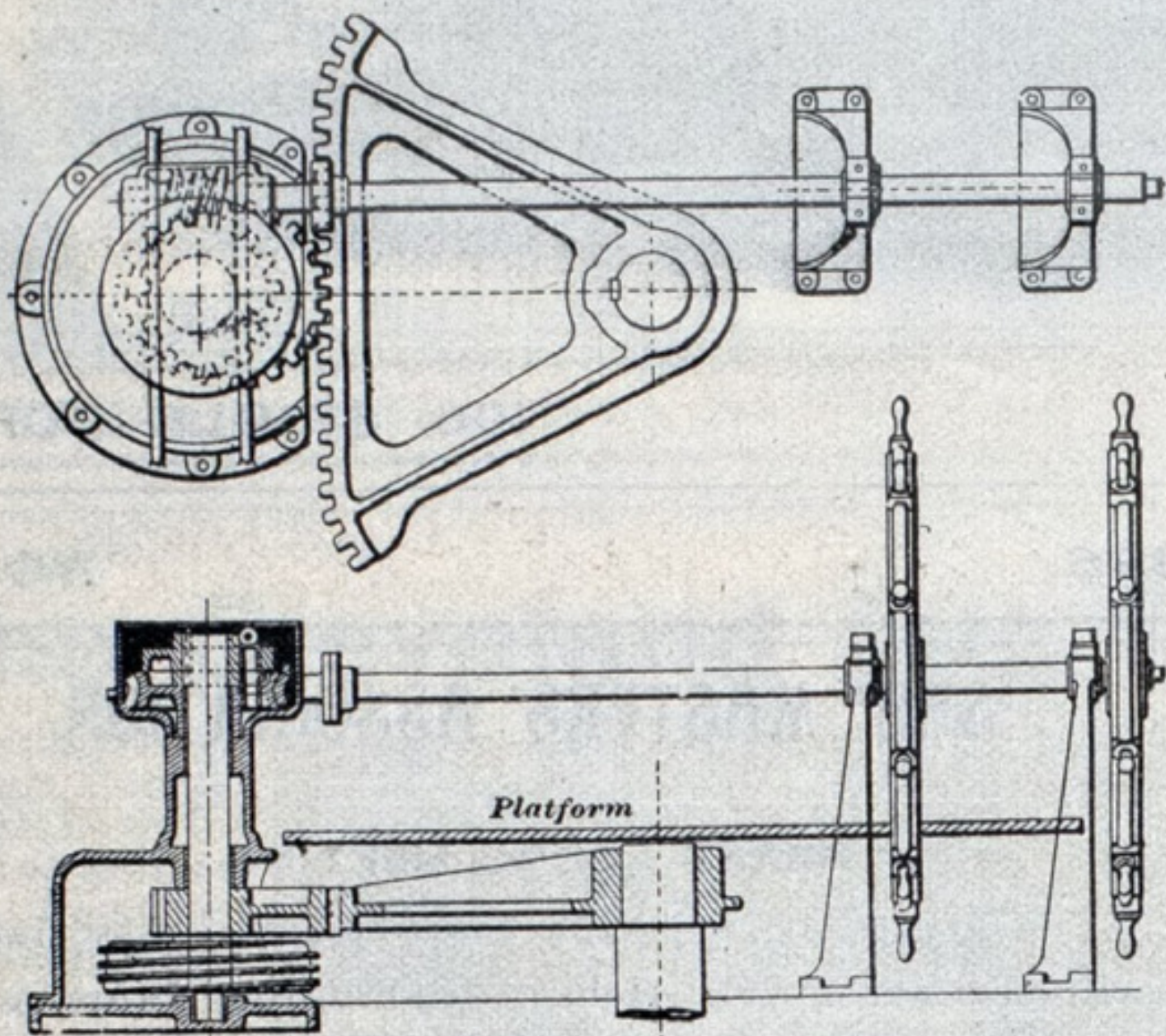
MCENTEE & DILLON, Rondout, N. Y., are building one tug and two lighters for parties at Nicaragua. The tug is of iron, 65 feet by 19 feet by 7 feet; has twin screws, direct acting surface condensing engines. She is of light draught and is intended for freight, passengers and towing. The lighters are also of iron and of very light draught.

THE intelligence office of the Navy Department has records showing that Great Britain has just 52 vessels of war whose draft will permit of their entrance through the Welland canal. One of these carries eleven inches of armor; but the remainder are ordinary cruisers, with no protection to their sides.

HARFIELD'S PATENT HAND STEERER.

(SEE ILLUSTRATION.)

For the interest of our readers we reproduce from the Engineer, London, illustrations of a novel hand steering gear recently applied to three steamships (one of which, the Fort Salisbury, was built by Sir Wm. G. Armstrong, Mitchell & Co., Walker, Newcastle-on-Tyne) of the British and Colonial Steamship Company. The horizontal shaft with the steering wheels upon one end has a worm upon the other end operating a vertical shaft which carries an eccentric pinion, and this works into



the compensating rack head upon the top of the rudder stack. It will be readily seen that this arrangement secures a greatly increased leverage upon the rudder as it is put over in either direction. The spiral rope wheel upon the lower part of the vertical shaft is for the auxiliary or preventer steering ropes if the hand wheel should be carried away. The rudder stock, which is flanged and bolted to the rudder, is carried up through the deck, and fitted with the compensating rack head patented by Captain Harfield. The steam steering gear is attached to the rudder shaft upon the deck below.

PUSHING THE NAVAL RESERVE.

THE RECORD is indebted to the courtesy of Congressman Burton for a copy of House bill No. 2563, which was introduced by Hon. Amos J. Cummings, of New York, and provides "that officers and men between the ages of 18 and 45 years, serving in the mercantile marine of the United States, as well as all ex-officers and formerly enlisted men of the navy, and who are citizens of the United States, who shall so elect, and who shall be found physically and professionally qualified by a board of naval officers appointed by the Secretary of the Navy, shall be enrolled in a naval reserve for navigating duties, for periods not exceeding five years, in grades and ratings for which they may be found qualified, and which shall be established by the President, corresponding to grades and ratings existing in the navy; provided, that such officers and men shall be held to be in the United States service during the periods of enrollment and may be called into active service in time of actual war, or when the danger of war is imminent, and shall obey such call, under the pains and penalties of desertion; and provided further that the officers and men of the life-saving service, the lighthouse service, the revenue marine, and the coast signal service may be enrolled in the naval reserves and may be assigned to such duties and receive such annual instruction in naval warfare as the President may prescribe.

"SEC. 2. That each officer and man of the navigating naval reserves shall be required to report in person once each year to such naval authority as the Secretary of the Navy may select for training, not exceeding 30 days in any one year, and shall satisfy such inquiries and examinations prescribed by the Navy Department as may be necessary to ascertain his continued fitness for duty; and upon the completion of this annual requirement each petty officer shall receive \$30, and each man of inferior rating \$20; provided, that no annual premium shall be paid except when this report in person is made, and that if the examination shows unfitness for duty in the grade or rating held by any navigating reserve officer or man, he shall be at once discharged from the service without compensation.

"SEC. 3. That the navigating naval reserves shall

not be called into active service in time of peace except for the purpose of training, but such officers and men of this branch as may elect to join the colors for naval training during the period of annual drill of the organized reserve forces shall be mustered into the naval service of the United States for that period, and men in such active service shall receive the same pay and allowance as the organized reserve forces.

"SEC. 4. That any vessel commanded by an officer of the naval reserves, and which shall have in her complement five other officers and men belonging to the naval reserves, shall have the right to fly from her mainmast head a distinctive flag or pennant with the letters U. S. N. R.; provided that the color, shape and size of such flag or pennant shall be prescribed by the Secretary of the Navy and furnished by the Navy Department."

The remainder of the bill deals with unimportant matters of detail, and provides for a continuous annual appropriation of \$100,000 to meet the expenses necessitated by the operation of the law.

DIXON'S HANDSOME PRESENT.

When the Joseph Dixon Crucible Company does a thing, it does it in fine style. This company was established in 1837, for the manufacture in graphite, and have extended their list until their catalogue includes stove polish, lead pencils, paints, lubricants, water proof grease for use on ropes, gears etc., which are exposed to water, graphite, cup and axle grease, pipe joint grease, and crucibles of all sizes and for all purposes. The company, which is located a Jersey City, is sending out to its newspaper friends boxes of pencils and erasers. It is probably not possible for any other manufacturer in the world to send out as fine and varied an assortment for stationery purposes. But Dixon's pencils are so well known that they can hardly be further advertised. The Dixon Company, however, is a thorough believer in the efficiency of advertising its wares in general, and this is probably the reason the firm is so prosperous, especially when they do all and more than they advertise.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD by George F. Stone, Secretary Chicago Board of Trade, January 4, 1896.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Albany		80,000	215,000		80,000
Baltimore	377,000	1,344,000	182,000	113,000	
Boston	1,274,000	254,000	15,000		
Buffalo	3,103,000	114,000	78,000	474,000	2,005,000
" afloat	259,000		223,000		304,000
Chicago	21,192,000	1,099,000	533,000	235,000	24,000
" afloat		449,000	86,000		
Cincinnati	42,000	2,000	24,000	35,000	126,000
Detroit	367,000	18,000	15,000	12,000	7,000
" afloat					
Duluth and Superior	8,763,000	8,000	653,000	150,000	148,000
" afloat	512,000				
Indianapolis	108,000	51,000			
Kansas City	1,553,000	5,000	72,000	29,300	
Milwaukee	440,000		1,000	178,000	31,000
" afloat	176,000		120,000		
Minneapolis	18,672,000	76,000	686,000	155,000	176,000
Montreal	250,000	8,000	290,000	3,000	34,000
New York	8,025,000	1,043,000	1,709,000	32,000	272,000
" afloat	1,778,000	458,000	338,000		355,000
Oswego	14,000	24,000			146,000
Peoria	63,000	80,000	316,000	1,000	1,000
Philadelphia	533,000	420,000	156,000		
St. Louis	1,424,000	47,000	610,000	13,000	12,000
" afloat		16,000			
Toledo	872,000	171,000	181,000	122,000	
" afloat					
Toronto	45,000		52,000	5,000	29,000
On Canal		8,000	12,000		
On Lakes					
On Mississippi		63,000			
Grand Total	69,842,000	5,838,000	6,537,000	1,557,000	3,750,000
Corresponding date 1894	87,886,000	10,672,000	8,826,000	464,000	2,875,000

The Columbia Pad Calendar for 1896 has made its appearance, representing the eleventh annual issue, and handy and convenient as it has been heretofore, the new issue certainly surpasses any of its predecessors. The new calendar contains a much better arrangement than in previous years, more space having been allowed for memoranda, while a greater charm has been added by liberal illustration and a unique and convenient grouping of dates, calculated to meet the hurried needs of business men. In addition to these pleasing features of the moon's phases are indicated for the benefit of those who wish to know the best time for night riding. The many dainty sketches that embellish its pages render it indeed a work of art. Owing to the unusual demand last year a much larger edition has been issued for 1896. The calendar can be obtained for five 2-cent stamps by addressing the Calendar Department of the Pope Manufacturing Co., Hartford, Conn.

LAKE LITIGATION.

Cases in admiralty which are set for hearing this winter, in addition to those already announced, are as follows:

- 4,479—Charles St. Louis vs. scow Magnet.
- 4,493.—William Carron et al. intervening vs. schooner Julia Willard.
- 4,496—Richard Voelkner vs. steam yacht Ethel S.
- 4,503—C. E. Benham et al. vs. 400 cords pulpwood, etc.
- 4,504—Same vs. 485 cords pulpwood, etc.
- 4,507—Martin B. Jones vs. steamer Vanderbilt.
- 4,508—The Wallace & Cunningham Transit Co. vs. steamer H. E. Runnells.
- 4,516—M. P. & A. B. Scott vs. steamer Maine.
- 4,518—Mary C. Hubbell vs. steamer W. P. Thew.
- 4,519—Joseph Dupuis vs. scow Huron.
- 4,526—William E. Rice vs. schooner Mary E. Perew.
- 4,529—Patrick McLachlan et al. intervening vs. Marsh-land Dredge No. 1.
- 4,531—C. E. Chilson et al. vs. steamer Parks Foster and tug Kittie Haight.
- 4,190—Mitchell Transportation Co. vs. steamer Susan E. Peck (Lewiston.)
- 4,534—Louis D. and Ed. T. Hawley vs. barge John Breden.
- 4,538—Bertha Kinrie, admx., vs. steamer Sitka and barge Yukon.
- 4,541—John C. Hawley et al. vs. steamer Sailor Boy.
- 4,545—The Cleveland Tug Co., vs. David Finlayson and garnishee.
- 4,551—Charles Perroult vs. schooner Superior.
- 4,555—Roderick Thompson vs. Breyman Bros., coal scow.
- 4,556—William Schmuhl vs. tug McCormick.
- 4,557—David Robeson vs. barge S. Clement.
- 4,559—Charles Leith vs. steamer James Fisk.
- 4,560—Wm. Parker et al vs. steamer J. H. Devereux.
- 4,389—John Kamerer, Ed. B. Hanratty, William Wyle, William A. Chamberlain, Thomas Thurston, Charles H. Flowers and Nelson E. White vs. yacht Rosalie B.
- 4,380—Patrick Devney et al vs. steamer Dove.
- 4,390—United States vs. tug Sprite.
- 4,391—Louisa B. Grummond vs. steamer Leland.
- 4,395—William Bandes vs. steam yacht Louisa.
- 4,478—Menominee Transit Co., vs. steamer Jack.

NEW INVENTIONS.

(ILLUSTRATED.)

The following patents of interest to the marine and relative industries, have been issued within a week:

No. 552,248. Life-Boat. Algernon L. Hassard-Short, Tarborough, N. C. Filed July 23, 1895.

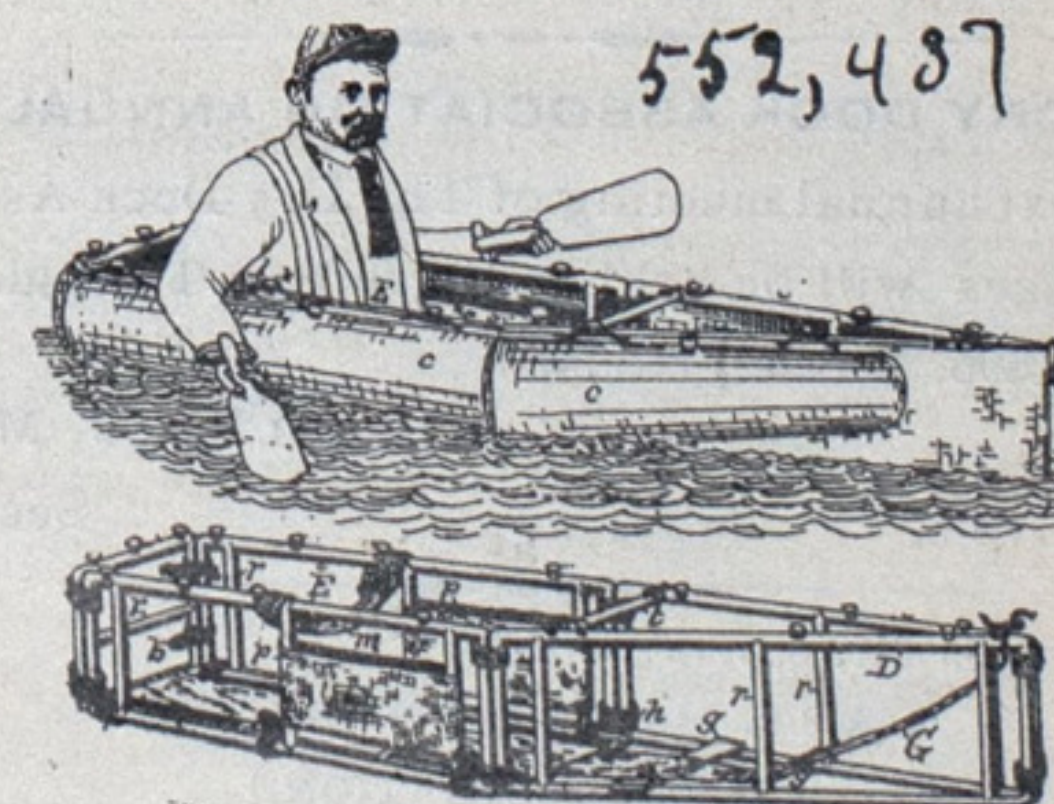
The claim is for the combination, with a life-boat, of an attachment consisting of a frame which surmounts the boat, said frame being composed of a casing which is filled with cork or other light material, said frame being also supported and connected with the boat by means of strips which pass beneath the boat and



through the keel thereof, and rods which are secured to the top of the boat. The strips are bound together by means of other strips, which are arranged transversely thereof and which meet at the bow of the boat. The frame is provided with a central core through which the strips and rods are connected.

No. 552,437. Folding Boat. Frederick Heather, Yonkers, N. Y. Filed July 31, 1895.

This device consists of sections to form the sides, sections to form the bow, and a section to form the stern, these sections being connected to each other at their meeting edges, and a bottom, which is hinged to



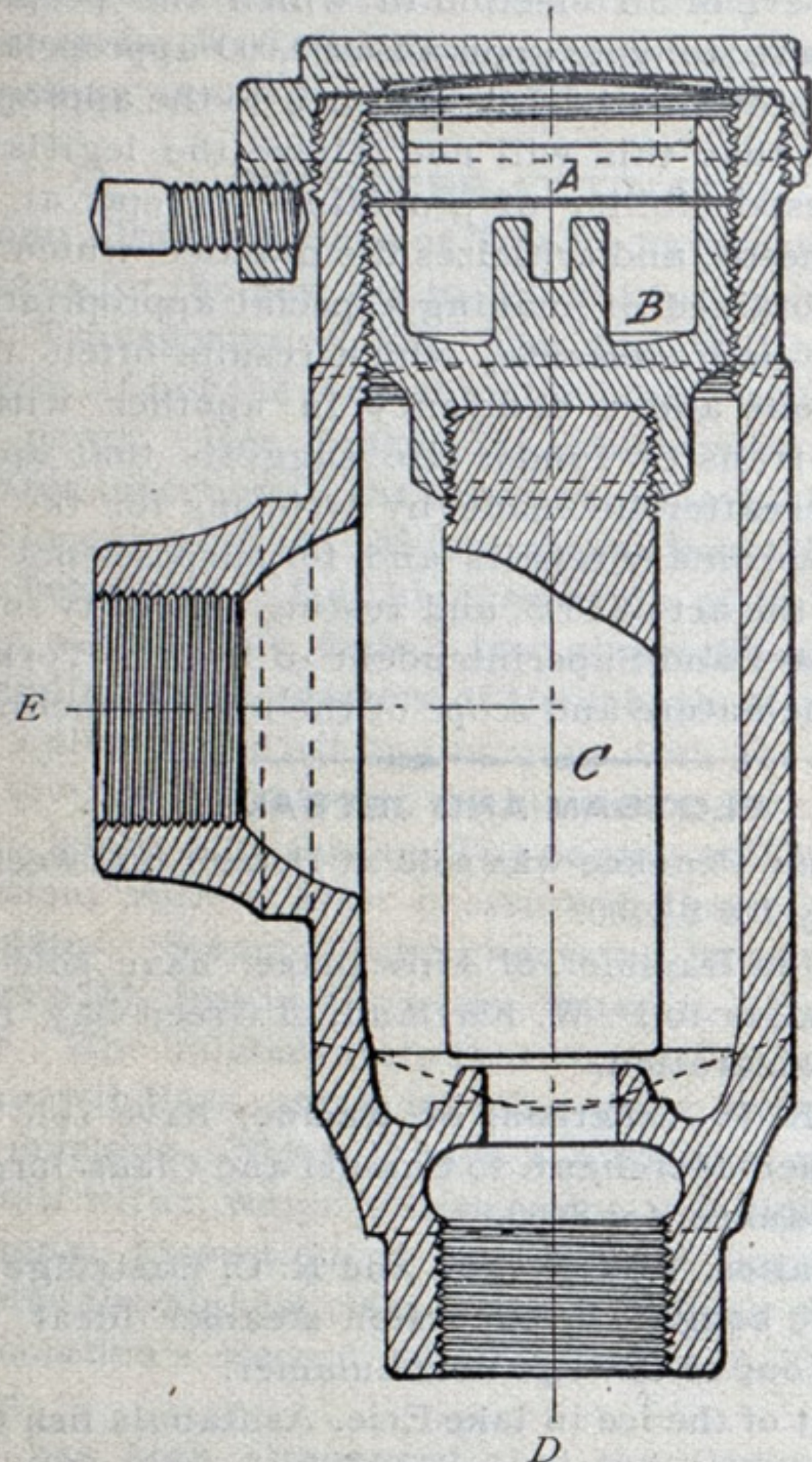
one of the side sections; all so arranged as to be easily folded together. Each part of this frame-work consists of a chain of upright sections hinged together at their ends, so that they can be folded together in alternately opposite directions. All this is covered with a removable flexible material.

A SIMPLE TRAP.

(SEE ILLUSTRATION.)

We illustrate what is called by the makers, for the sake of a name, the Diamond trap. This is a simple and inexpensive device specially designed for automatically discharging the water of condensation in car-heating, heaters in rubber works, and similar places where, say 500 or 1,000 feet of $\frac{3}{4}$ inch or 1 inch pipe is to be taken care of. The steam is to be connected to the opening *D* and the discharge takes place at the outlet *E*.

To adjust the valve for service steam is first allowed to blow through until the entire valve is thoroughly



heated. The head *B* with the expanding plug *C* is then screwed down, and fastens the plug permanently in position, and the outer cap is screwed down tightly over all. While the chamber is filled with steam the valve will remain closed, but as the water collects in it, the temperature will fall, the plug *C* will contract, being made of special material for this service, and the water will flow out until the steam arrives again, when the valve will instantly close. The diamond trap is made by Jenkins Bros., 71 John street, New York.

GREAT TRUTHS ELOQUENTLY SPOKEN.

In discussing American shipbuilding, at a recent dinner in New York, Charles H. Cramp took the position that no nation can be considered commercially independent unless it has a merchant marine and an adequate navy to defend it. He says we are to-day practically "in subjection to the trade impulses of Great Britain," and will not be independent of her until the American flag is restored to the high seas. He advocates some system of government aid to this industry, because other nations give aid to theirs, and also because we give aid to the internal commerce of the country by liberal subsidies to railroads for carrying the mails. He says that Great Britain recognizes the fact that a ship carrying her flag to other countries is something more than the private property of the owner. It is a part of the country itself, and the nation has a share in the ownership of such property. He says that except for the insistence of Secretaries Whitney and Tracy that our new warships should be built here, although the cost would be greatly enhanced at first, the shipbuilding industry of this country would be practically prostrate. He declares that as a result of this a ship can now be built here at only a trifle more in cost than in England, and that ship for ship we can produce better vessels. He says that without government aid our merchant marine cannot be revived quickly, and that its prostration is not due to our obsolete navigation laws, because these laws were in effect when the shipping industry was at its greatest prosperity and nearly equaled that of Great Britain. If this aid is not given, Mr. Cramp says, the industry must revive very slowly as we require wealth; but it will be so slow that it is

doubtful if a naval building program will keep the yards in a state of efficiency to build the vessels. He closes with a burst that is somewhat eloquent:

"A fine specimen of marine architecture is always a standing lesson in patriotism. It is required to display the flag of its country. As it passes from port to port it is more than a mere floating vehicle for commerce. It is a bit of its nation's soil. Around its existence and its journeyings the romance of travel and the dignity of nationality centre. It speaks of home to the citizen in foreign lands. It means a prosperity for those at home and abroad. No patriotic citizen should relax his efforts to secure a revival of this industry in some form or other."

LAST QUARTER OF 1895.

Commissioner Eugene T. Chamberlain, of the Bureau of Navigation, favors THE RECORD with the following figures relating to the number of steam vessels built in the United States, and officially numbered, as shown by the records of the bureau, during the quarter ended December 31, 1895. The Great Lakes do not make as good a showing as usual, owing to the fact that all building is done with a view to completion not later than the third quarter of the year, in order to get the benefit of at least a part of the navigation season. The Atlantic and Gulf coasts show a decided improvement in all classes of tonnage. The figures are as follows:

	QUARTER ENDED DEC. 31.		PREVIOUS QUARTER.	
	No.	Gross Tons.	No.	Gross Tons.
Total Sail.....	73	9,609.69	108	20,166.78
Total Steam.....	55	19,726.04	92	38,888.11
Grand Total.....	128	29,335.73	200	59,054.89

	WOOD.				IRON.		STEEL.		TOTAL.	
	SAIL.		STEAM.		STEAM.		STEAM.			
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf.....	59	7,458.76	12	2,842.85	.....	.....	10	5,996.66	81	16,298.27
Pacific.....	12	2,088.84	7	469.05	.....	.....	1	691.05	20	3,275.94
Great Lakes.....	2	62.09	3	2,091.83	1	1,938.12	3	2,816.15	9	6,908.19
Western Rivers.....	.....	.....	18	2,853.33	.....	.....	.....	.....	18	2,853.33
Total.....	73	9,609.69	40	8,284.06	1	1,938.12	14	9,503.86	128	2933.573

QUERIES AND ANSWERS.

CONSTRUCTION USED IN THE GREAT EASTERN.

To the Editor of The Marine Record:

Please give, through the columns of your paper, a statement of the material used in the construction of the Great Eastern. We ask the above question to settle an argument.

CAPT. F. L. W.

Au Gres, Mich., Dec. 31, 1895.

The dimension of the Great Eastern, which was built in 1853, were 692 feet in the upper deck, 680 feet between perpendiculars, 82 feet beam, and 118 feet breadth over the paddleboxes; depth 60 feet, or 70 feet to top of bulwarks. The bottom was flat, and 40 feet wide, without keel. The framing included 35 webs of plate iron, three feet deep, extending from end to end of the ship, spaced 3 to 5 feet, and crosswebs of similar strength, connecting these at intervals. A double skin of plate outside and inside these ribs converted the whole into a cellular structure similar to the bottoms of the large vessels built by Wheeler & Co., of Bay City, and some of the output of the Globe shipyard, Cleveland. There were ten watertight bulkheads, extending athwartships, and fore-and-aft bulkheads increased the number of compartments. The paddle engines had four boilers, each with 400 brass tubes; there were four engines, with cylinders 74 inches in diameter by 14 feet stroke of piston. The paddle wheels were 56 feet in diameter by 13 feet deep, with 30 radii.

The screw engines had six boilers. There were also four of these engines, 84 inches in diameter by 48 inch stroke. The fuel bunkers had a capacity of 14,000 tons, and the smoke ascended through five funnels, each 100 feet high by 6 inches in diameter. She was expected to carry, beside her full quota of fuel, 5,000 tons of freight and 1,000 passengers. She had six masts, three of them iron, carrying 7,000 yards of sail. The weight of the material in her was about 4,600 tons, and after her varied and unprofitable career, was sold for junk.

MESSRS. IRVING BLOUNT, nautical expert at the New York Hydrographic Office, and John Martin, C. E., have opened a nautical school at Room 611, No. 44-46 Broadway, New York.

ELECTRIC FERRY BOATS.

Eight small electric ferry boats were put into service some time ago at Bergen, Norway, to replace the old inadequate row-boat system, and afford interesting evidence of the growing appreciation of electric motor possibilities. The boats are about 16 feet long, of $6\frac{1}{2}$ feet beam, and $2\frac{1}{2}$ feet draught, and have a displacement of about 6 tons. They are built symmetrically fore and aft, and are provided with a screw and rudder at each end. The screws are on a common shaft, direct coupled to the motor, which is series-wound, weighs about 600 pounds, and is rated at three horse-power. It is placed in the middle of the boat under the flooring. The storage batteries are placed partly under the flooring and partly under the seats. The plates of each battery weigh about 3,000 pounds, and have a capacity of about 20,000 watt-hours. The battery itself consists of 32 cells in series, and weighs altogether about 5,280 pounds. The average speed, with a power of 2,300 watts, is about five miles an hour. Each boat runs about $37\frac{1}{2}$ miles a day, and about 1,800 passengers, on the average, have been carried by the ferry each day. After the day's work is over the boats return to the charging station, where the accumulators are charged during the night, and the necessary cleaning is done and repairs made. The charging station is fitted with a compound portable steam engine, a dynamo of 30 horse-power, and a suitable switchboard. During eight months' run of uninterrupted operation the plant is said to have proved excellent in every respect.

Tugs in ordinary at Sarnia are the McRea, Crawford, and J. P. Clark.

BUFFALO STEEL PLATE BELLOWS FORGE.

(SEE ILLUSTRATION.)

The Buffalo Forge Co's portable forge, operated by fan blast, is well known among boiler works, bridge works and other structural iron workers. The makers have recently added a forge in which the blast is furnished by bellows, and affirm that they have freed it from the drawbacks that they have been found hereto-



fore in bellows forges, namely: The liability to explosions of gas burning out the bellows; burning up and cracking of leather; irregular blast and erratic action. Double acting gas is prevented by a new escape valve. The barrel-shaped body of the forge is made of heavy rolled steel, reinforced at top and bottom and put together in such a manner that it will stand the rough handling incident to bridge, ship and other out-door construction work. The bellows are made of oak-tanned leather, seamed. The total height to top of bowl is 30 inches, and the diameter is 19 inches. The general contour of the forge is such as to secure great strength, combined with compactness.

THE MARINE RECORD is the repository for all engineering and nautical publications. Hydrographic charts always on hand.



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WILLIAM L. McCORMICK, } EDITOR.

BRANCH OFFICE,

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THOMAS WILLIAMS, Associate Editor.

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CLEVELAND, O.

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CLEVELAND, O., JANUARY 9, 1896.

THE RECORD is pained to announce the death, at New York, Monday, of Major James Clarence Post, who was recently appointed successor to the late Gen. O. M. Poe, in charge of the Sault canal and twenty-foot channel improvements. Major Post had not yet taken active charge of the details of the work, and his sudden death again leaves this important place vacant.

CAPT. J. J. H. BROWN will be unanimously chosen president of the Lake Carriers' Association for the ensuing year. The choice is a happy one, and will tend to cement closer than ever the various interests of the Lake Carriers' Association. The fact that the president and Secretary Keep, who will also be re-elected, are residents of the same port, will also be of advantage in carrying out executive work.

THE third four-year term of Commodore George W. Melville, Chief of Engineers of the Navy Department, will expire on the 16th, and he will probably be reappointed for a fourth. Commodore Melville is a man who cannot be spared. He has all the details of the new navy so thoroughly at his fingers' ends, and is so thorough in his administration that his reappointment is everywhere taken for granted. He may be an admiral soon.

SOME rather sensational headlines have been printed in reference to a combination of ore dealers, who have fixed the price for next year at \$4 per ton, for Bessemer high grades. The price, while an advance of \$1.10 over the rate of a year ago, is considerably less than the same ores sold for last summer, when \$4.50 was obtained on some sales. It is understood that the ore taken at \$1 from the head of the lakes now aggregates between 300,000 and 350,000 tons. Not a great deal of contracting will probably be done for two or three weeks yet.

THE annual report of the condition of the New York canals will be found in another column. It is hoped that this will be read carefully, as Supt. Aldrich makes some very sensible suggestions and recommendations. He approves especially of improvements in the canals which will tend to increase the speed of boats, pointing out that this more rapid movement would as materially increase the capacity of the boats as would deepening without other improvements. He might have added that more rapid transit would also attract certain classes of freight most of which is now shipped by rail. The lake interests, and especially the package freight liners, have a deeper interest in the Erie canal than most of them seem to imagine, as canal freight for western points is most likely to be trans-shipped at Buffalo to the lakeboats, whereas, much freight shipped by rail from the east is billed by an all-rail route whenever a company which does not own its boats, can succeed in so billing it.

NEW YORK CANAL REPORT.

Superintendent of Public Works (New York) Hon. George W. Aldrich has kindly forwarded to THE RECORD a copy of his annual report, which includes the financial statement for the year ending September 30, 1895, and tonnage for the season ending December 5. The whole number of tons carried upon the canals of New York during the season of 1895 was 3,500,314 tons, of which 2,327,481 tons was in transit toward tide-water and 1,172,835 tons was moved westward. Of these amounts 1,762,663 tons was through freight and 1,797,651 tons was way freight. The amounts carried by the several canals were as follows:

Erie Canal.....	2,356,084
Champlain Canal.....	966,335
Oswego Canal.....	64,691
Black River Canal.....	64,154
Cayuga and Seneca Canal.....	49,050

Total..... 3,500,314

The financial report shows an expenditure out of the ordinary repair fund of \$754,362.70. There was spent under especial appropriations \$551,120.37. The superintendent states that his order made a year ago, instructing that the practice of locktenders levying tribute upon canal boat men for services rendered must be discontinued has been obeyed, and he thinks the system entirely stamped out.

EXCESSIVE USE OF "SURPLUS" WATER.

An important section of the report is that upon the use of "surplus" water by mills and other establishments located along the line of the canal. "Early in the history of the New York canals," he says, "it was believed that a considerable revenue might accrue to the State by the leasing of the use of this surplus water, and many leases were executed, a number of which are still in force. The evil features which have developed and been fostered under the cover of this system have been manifold and far reaching. The money received for the use of this water, in past or present, is too small an amount to become an appreciable factor in canal receipts or management, and on almost every small stream into which water is occasionally discharged, mills and manufactories have been erected. As these interests have grown the canal has been depleted of water sadly needed for navigation, either as a result of powerful political or social influences brought to bear upon pliant officials, or by even more objectionable methods, such as bribery of the waste weir tenders and the opening of gates by night. Under the leases granted by the State, surplus waters have come to mean all the water that can, under any pretense, be extracted from the canal, without reference as to how the canal or its navigation will be affected thereby. I have made strenuous efforts during the past season to restrain this abstraction within reasonable limits, and believe with very marked success; still there is much more to be achieved along the same lines another season."

FILLING IN.

Supt. Aldridge next deals with the effect on navigation of the silt in the canal prism. The filling-up process, he says, has been going on for 25 years, and as the appropriation for canal repairs has been far too small for a general cleaning out, practically no cleaning has been done for several years, except to remove bars formed by inflowing streams. The result has been the gradual accumulation of deposits in the canals to an extent of not less than 2,250,000 cubic yards in the Erie Canal alone, and a proportionate amount in the other canals. If this was uniformly distributed across the prism of the Erie Canal for its entire length the draft of the boats would have to be reduced from 6 feet to 5 feet 4 inches. That this reduction has not been forced, he says, is due to the indomitable will of the boatmen, who have invented new means of propulsion, and have been able to keep open a narrow channel through which their boats could pass.

IN THE INTEREST OF SPEED.

Supt. Aldridge refers to the dilapidated condition of many of the structures of the canal, some of which were built half a century ago. He says: "I am of the opinion that in all improvements of the present canal, short of the deep waterway or ship canal, the central idea should be such an improvement as will enable a large increase to be made in the speed of loaded boats. If this is accomplished, then the carrying capacity of a single tow of boats is increased in the same proportion

that the speed is increased. The cost of an improvement of a canal of the present width so as to greatly increase the width and carrying capacity of the boats navigating the same would be out of all proportion to the results obtained; but if practically the same results are reached at moderate cost by such construction as will double the speed, then the boatmen will be placed in such relations to the carrying trade as will enable them to compete with other systems.

The superintendent dwells at length upon the attitudes of the railroads to the canal, and practically says that only one construction can be put upon their cut of 50 per cent in freight rates between Buffalo and New York at the eve of an election in which the people of the State were to vote upon a \$9,000,000 appropriation for canal improvement. In reference to the appropriation, he says that this will not relieve the legislature from the responsibility of providing for special and emergency needs, and criticizes the practice which has heretofore obtained of making especial appropriations for specific improvements, which results often in a surplus in one and a deficiency in another, without authority to transfer funds. He suggests that appropriations hereafter be made by divisions for the purpose of extraordinary repairs and for purposes not provided under the act of 1895, and vesting authority in the State Engineer and Superintendent of Public Works to determine the nature and scope of the improvements.

FLOTSAM AND JETSAM.

The steamer Penokee was sold at Detroit last week to J. M. Harvey for \$3,100.

John and Ida Hammel, of Milwaukee, have sold the schooner Badger to P. W. Kirtland, of Green Bay, for a nominal consideration.

John and R. P. Anderson, of Racine, have sold the little schooner Merchant to Samuel and Claus Jorgenson, of Milwaukee, for \$600.

Peter J. Baltes, of Oswego, and R. C. Eastridge, of Buffalo, have bought the excursion steamer Ideal, and will run her out of Oswego next summer.

On account of the ice in lake Erie, Ashtabula fish tugs have been unable to reach many of their nets, and the few that have been recovered are in a worthless condition.

Capt. James Reid's tug Protector made the latest passage of the Straits on record, having passed up, on December 31, on her way to do wrecking work on the steamer Jim Sheriffs.

More libels have been filed at Toledo against the steamer City of Toledo, tug Butler and the schooner M. T. Downing, in damage suits for personal injuries growing out of collision.

Fred Kindt, of Saratoga, N. Y., whose electric wrecking apparatus was described in the RECORD some time ago, has refused \$10,000 for his patent, and is in New York arranging to go to the Elbe.

The list of total losses for 1895 the Record inadvertently omitted to name the little schooner Julia Willard, which was abandoned and foundered near Point au Pelee after the season had practically closed.

The new double furnace of the Cleveland-Cliffs Iron Co., at Gladstone will go into blast about March 1. The stoves are being built to use charcoal, coke, or anthracite coal as fuel, and the experiment of making coke and anthracite pig will be tried. The outcome, if successful, may result in the location of a steel plant in that district.

During the season of '94 a total of 2,247 craft passed through Sturgeon Bay canal going down and 1,955, going up or south. The aggregate tonnage of these vessels was 1,239,580. Of the above there were 2,166 steamers, 2,026 sail and 140 unrigged. This does not include the tugs engaged in harbor towing, which pass through the canal dozens of times a day when business is at all brisk.

The War Department has ordered Maj. Sears, United States engineer, to establish a harbor in Chequamegon bay. This move is considered important, as an indication of appropriations to be recommended. A large number of new grain elevators are to be built at the head of the bay in the spring, which necessitates establishing a permanent harbor line, as a large amount of government dredging is necessary to get at the Fish Creek harbor.

THE MARINE RECORD is the repository for all engineering and nautical publications. Hydrographic charts always on hand.

SHIP BUILDING AND REPAIRS.

ANOTHER NEW PACKAGE FREIGHTER.

It is now generally admitted that the new steamer which the Union Dry Dock Co., are building is for the Union Steamboat Co., owners of the large fleet of which the Owego and Chemung are now the crack boats. As soon as this steamer is in the water a duplicate will begin immediately in the same berth, and for the same company, which will be ready for use before the fall rush begins in the grain and flour trade. Work on the material has already begun.

The steamyacht which the Union Dry-Dock Co., are building for W. J. Connors is far enough advanced for launching at any time the builders' consider convenient.

PROGRESS AT TOLEDO.

John Craig & Sons of Toledo, have completed their designs for the new tug to be built for the Lake Michigan Transportation Co. The tug will be one of the largest, if not the largest on the lakes, with corresponding power. Her dimensions, which were obtained too late for insertion in the accompanying table this week, are: length over all, 145 feet, and on keel 135 feet, with 30 feet beam and 16 feet 3 inches depth of hold. She will have a hurricane deck 8 feet above the main deck and extending three-quarters of the length of the tug, leaving a clear space aft on the main deck for free play of the tow line. On top of the hurricane deck will be the pilot house and texas. The engine will be a triple expansion, with a high pressure cylinder of 19 inches diameter. Steam will be generated by two Scotch-type boilers 11½ feet in diameter, tested to 175 pounds pressure. The builders state that she will be equipped with steam windlass, steam steering gear and a steam towing machine. She will have a large fuel capacity and is built with a water bottom. She is building under the personal inspection of Mr. Robert Logan, and will receive the highest class in the American Shipmasters' Association's Record of American and Foreign Shipping.

It has been announced that the Craig Co. will also build two wooden car ferry barges for the same company, similar to those built last year by James Davidson, of West Bay City. This so far lacks official confirmation, and may possibly not prove correct, as it has been stated that the tug may engage in other work in addition to her regular duties. At any rate, however, contracts for two wooden vessels, either steam or sail, are brewing in this yard, and will probably be announced soon.

ANOTHER REBUILD.

The Graham & Morton Transportation Co., who gave a contract last summer to the Montague Iron works Co., of Montague, Mich., for a new compound engine for the steamer City of Louisville (formerly R. C. Reid) have decided that it will be necessary to increase her beam four feet to afford proper accommodations for this engine, and for a new boiler which she is also to have. The City of Louisville was lengthened thirty feet when she was rechristened, about a year ago. The Milwaukee Dry Dock Co. have been awarded the present contract, at a price of about \$12,000. The beam will be increased by lengthening the floor timbers two feet on each side. This will necessitate that taking up of both decks, and putting in new deck beams. The cabin will also be widened four feet, this being done by splicing the roof carlins.

A NEW BRITISH SCHOONER.

The Montreal Transportation Co., has given a contract to build a wooden three-masted schooner to carry 60,000,000 bushels of grain, and to cost 50,000.

LIGHT DRAFT EXCURSION BOATS.

Light draft excursion steamboats in small and medium sizes for use on rivers and inland waters are being built by Marine Iron Works Clybourn and Southport avenues, Chicago, and among other contracts of this character recently placed with that company is one for Pennsylvania, the limit of draft being 14 inches when the boat is fully loaded. She will be of the stern paddle wheel design, operated by two direct-acting engines and unlike the old "scow" type of boat, will be regularly modeled hull, attractive and capable of making excellent speed, while her carrying capacity is large.

This firm make a speciality of furnishing complete outfits of machinery and equipment to boat builders and where desired, supplying small models and other details which from their experience they have found to prove the best.

CROWDED FOR SPACE.

The Bertram Engine Works, Toronto, have completed one of their side-wheel tugs they have been building for the Upper Ottawa Improvement Co., and have shipped it to Pembroke, Ont., to be put together. She is to be operated by the engine of one of this company's tugs, which burned some months ago. The work of building the passenger steamer which will take the place of the burned libola, is well under way. The steamer will be built on a coal dock adjoining the Bertram Engine Works, the latter company's yard being so full of work that they had no room for her.

THE HAIGHT'S SUCCESSOR.

At Port Huron, Runnells & Maines will lay the keel sometime this week for a new tug for the engine of the old tug Haight. She will be about ten feet longer than the Haight, and will be given a new boiler built for 140 pounds of steam. She will be one of the most powerful tugs on the river, and will be modeled after the Haight as much as possible. The barge E. C. Roberts, which was wrecked on Starve Island Reef, Lake Erie last fall has been rebuilt by the Wolverine Dry Dock Co. and is now in first class shape.

KENDALL.

THE CLEVELAND YARDS.

Cold weather has seriously interfered with riveting during the elapsed week, but most of the yards have been able to do a great deal of repair and preparatory work.

The Cleveland Ship Building Co. find it necessary to set the outer track of their traveling crane several feet nearer the river in order to accommodate the increased beam of the new Wolvin and Rockefeller boats. While doing this, they are giving their cranes a general overhauling. The tug for the Duluth & Iron Range Railroad is partly in frame, and the keel of the Queen City is partly completed.

The Globe shipyard has a new superintendent in the person of Mr. Robert Curr, who is no stranger in Cleveland, having been with the Cleveland Ship Building Co. until less than two years ago, after which he had charge of the construction at the Globe Shipyard, of the steel tugs L. P. Smith, Sprankle and Marguerite for the Cleveland Tug Co. He then went to Toronto, Ont., and was with the Bertram Engine Works, where he remained for fifteen months. He has been with the Union Dry Dock Co., Buffalo, for three months past. He is a young man of recognized high capabilities, and is already well conversant with the work of the yard. He took charge with the opening year.

The shell plating of the new Mutual ship is almost completed, but there is considerable interior work to be done yet before she is ready for launching. The keel for one of the Rockefeller ships is already down. The keel for the other will be laid in the berth of the Mutual boat after she is launched. The keel of the revenue steamer John G. Carlisle is down, and the work of framing well begun.

GENERAL REPAIR WORK.

At the Ship Owners' dry-dock, Cleveland, the extensive repairs on the Wallula are about half finished. These repairs consist of almost an entire new bottom, recalking all over, and an additional keelson, 14x16 inches, extending the full length inside. In addition to the insurance job, Capt. Wilson is having new decks and new upper deck. The Cleveland Tug Co.'s dredges Nos. 8 and 9 and Mud Scow No. 6. are in for an overhauling preparatory to setting about spring work. The Curry and Pioneer will follow in dock.

The rebuild of the tug Tom Maytham, at this yard, is progressing rapidly and the hull will be launched next week. The hull is almost entirely new. The Cleveland Ship Building Co., are now engaged in rebuilding her engine.

At the Cleveland drydock the steamer Globe was in for a few days, after which the Saxon went in Tuesday evening for an examination and repairs to her bottom.

CHICAGO.—At Miller Bros.' shipyard the work on the steamer John Emory Owen and consort Michigan, in dock, is progressing as fast as the inclement weather

will permit. The repairs on the Owen are nearly completed and she will probably go out of dock this week. The steamers Ed Smith Nos. 1 and 2 and John Harper are receiving general repairs. The barge Wm. D. Decker will receive a new rudder, anchor stock and general repairs.

WILLIAMS.

MILWAUKEE.—The Ann Arbor No. 2 was in dock at the Milwaukee Dry-Dock Co.'s south yard Saturday, when it was found that the loss of her wheel had been caused by the breaking of her shaft. At the company's west yard the steamer Frank Woods and tug M. F. Merrick were in for repairs, and were followed by the S. J. Macy, which is getting a new piece of keel, new garboard strakes, and a new shoe. The City of Venice is at the south yard for recalking, new rudder, and minor repairs.

REPAIR NOTES.

The Hart steamer Welcome will have some radical changes in her upper works made at Sturgeon Bay this winter.

The rebuild of the Menominee at Burger & Burger's shipyard, Manitowoc, will cost, it is said, \$60,000. She is to be named the State of Nebraska when she comes out.

The Union Dry-Dock Co., Buffalo, has been awarded a claim of \$3,000 for extensive repairs on the city's fire tug George R. Potter.

The boiler of the lost steamer Newburgh, which went ashore on the north side of Lake Erie, beyond Long Point, several years ago, is to go into the steamer Rube Richards. Capt. Vosburg, of the E. C. Hutchinson, will superintend the work and command the steamer next season. Capt. Place goes to Chicago to take charge of the Germanic and Hutchinson. The steamer will receive steel arches, and the Hutchinson new decks and spars. Capt. Place will command the Germanic next season.

HE'S STRUCK IT AT LAST.

Fairplay says that the following letter was received by a well-known London shipping Company:—

66, Elizabeth street, Salford,
Manchester, 27th November, 1895.

DEAR SIR:—I have much pleasure in submitting to your notice my new invention for the propulsion of sailing ships. This system can be fitted to your wood sailing ship now at—docks and will guarantee to drive her at 12 knots per hour at the cost of ninepence per hour. This process produces condensed water for the ship's domestic use; you will observe the few particulars over. I have a set of engines and boiler ready suitable for the—and could fix them on while she is near the dry dock at—. Would only require a funnel 10 or 12 inches in diameter what could be suitable for a donkey boiler. You should have this fixed while she is here all fixed for the sum of £1,000 and would be worth your while if it cost £3,000. The engineer to attend to these engines would be a donkey-engine man.

Yours very truly,

WM. HUTCHINSON.

IMPORTANT NOTICE TO SAILING SHIP OWNERS.

REVOLUTION IN THE SHIPPING TRADE.

A new invention for the propulsion of sailing or steam ships without sails, paddles, or screws, all goes aft under the cabin.

Takes little or no cargo space.

The propulsion of a thousand-ton ship will cost 6d. per hour at a speed of 12 knots and any increase of speed at a frivolous cost. All perfectly noiseless.

At eightpence per hour will pass any ship on the ocean.

Will go astern, steer without rudder instantaneously without interfering with the going ahead or going astern or the man on the lookout.

Nothing outside the ship to catch lumber or wreckage.

Will turn completely round in her own length in dock or at sea. No surface condensers, circulating pump, thrust block or link motion required, or air pump.

The above will be put in under guarantee to the foregoing effect.

The invention can easily and cheaply be applied to iron or steel sailing vessels or steamers.

The electric light is produced from the exhaust steam after it has propelled the ship before it is condensed, and then the boiler is fed with the water, in fact this will be a marvelous property and life saver, as she can tack about like a fish to meet the mighty waves in the mighty ocean,

WM. HUTCHINSON.

TUGS BY THE DOZEN.

Receiver J. L. Higgin, jr., of the late Vessel Owners' Towing Co., Chicago, has been authorized by the court to sell the 12 tugs owned by this company. The tugs range in length from 66 to 90 feet. He advertises them on Page 15, where a full description will be found.

IN THE ENGINE ROOM.

BOILER EVAPORATION.

The amount of steam that a boiler can evaporate depends mainly on the amount of coal that can be burned under it. If the draft you are using will permit you to burn no more than 15 pounds of coal per square foot of grate, and at that rate the coal will evaporate no more than 9 pounds of water per pound of coal, then the greatest amount of steam you can make per square foot of grate per hour is $9 \times 15 = 135$ pounds, and the greatest amount of steam your boiler can generate is 135 multiplied by the grate surface. If you have forced draft the conditions will be different. You can burn more per hour, but probably with a decreased evaporation per pound of coal. At all events you can determine in this way the maximum amount of steam that your boiler can evaporate in a given time, under the most severe conditions to which it can be subjected. The number of pounds of steam that will flow through an orifice of one square inch in a second may be found by dividing the absolute pressure by 70, and the area necessary to discharge the steam as fast as it is made will be found by multiplying the maximum weight of steam that can be generated per second, by the absolute pressure and dividing by 70.

The area afforded for the escape of steam depends as much upon the lift as the diameter of the valve. For a flat seat the area of opening is the lift multiplied by the diameter and by 3.1416, and would only be equal to the area of the valve when the lift was one-quarter of the diameter. For beveled seats the calculation is more complicated and cannot be gone into here. Enough has been said to point out the limitation of the ordinary rule as given.—Power.

BAY CITY M. E. B. A.

Newly elected officers of the Bay City Marine Engineers' Beneficial Association are: President, L. C. Schwall; vice-president, Thomas W. Graham; recording secretary, Henry Montaigne; financial secretary, N. P. Slater; corresponding secretary, J. A. Braman; treasurer, Louis Gelenas; conductor, J. L. Wiley; chaplain, Charles E. Harman; inside doorkeeper, C. G. Pierce; trustees, N. P. Slater, Louis Schwall, Thomas Graham; representative, J. A. Braman.

AN ENGINEERS' BILL.

An important bill has been introduced by Representative Hopkins, of Illinois. It is entitled, "A bill to amend Section 4131 of the Revised Statutes of the United States, to improve the merchant marine engineer service, and thereby also to increase the efficiency of the naval reserve." The section referred to is amended to read as follows:

"SEC. 4131. Vessels registered pursuant to law, and no others, except such as shall be duly qualified according to law, for carrying on the coasting or fishing trade, shall be deemed vessels of the United States, and entitled to the benefits and privileges appertaining to such vessels; but no such vessel shall enjoy such benefits and privileges longer than it shall continue to be wholly owned by a citizen or citizens or a corporation of the United States and to be commanded by a citizen of the United States. And all officers of vessels of the United States shall in all cases be citizens of the United States. The word 'officers' shall include the chief engineer and assistant engineers on vessels propelled wholly or in part by steam, and no person shall be qualified to become an officer of a merchant vessel of the United States who is not a native-born citizen or whose naturalization as a citizen shall not have been fully completed.

"All licenses issued to officers of steam vessels shall be graded in accordance with the laws governing the steam vessel inspection service, and no licenses for a higher grade shall be issued except upon written application by the holder of a license, which application shall not be granted unless the applicant shall have successfully passed an examination before a regularly authorized board of examiners, as to his qualifications to be an officer of the advanced grade, nor until such applicant shall have served under his existing license at least 12 months prior to his application for advancement; and no license shall be suspended or revoked except upon

charges duly preferred in writing, verified and acknowledged before an officer authorized to administer an oath, and sustained by the Supervising Inspector General after an investigation of the charges, in which the accused shall be allowed counsel, and may testify to his own behalf; and in no case shall the accused be deprived of his license until a charge of incompetency or unfitness against him shall be sustained by the Supervising Inspector General. * * *

"Every license issued shall be for a term of five years, but the holder of a license may have the same renewed for another five years at any time before its expiration. * * *

"In time of war or other emergency any person who shall accept a license as engineer of a steam vessel shall be subject to temporary draft into the navy of the United States to act as engineer under such regulations as may be established by the Secretary of the Navy; and while serving in the naval service of the United States such person shall be entitled to receive the same pay and emoluments as an officer of the navy of the same grade performing similar duties."

The law as it stands at present allows licenses to be issued to persons who have merely declared their intention to become citizens of the United States. The bill seems to curtail the present jurisdiction of local inspectors, who have now authority to take cognizance themselves of acts which indicate incompetence or unfitness.

AN OLD RELIABLE HOUSE.

(SEE ILLUSTRATION.)

There are few establishments better known to the



INTERIOR RUSSELL & WATSON'S STORE, BUFFALO.

shipping men on the lakes that of Russell & Watson, 139-141 Main street, the successors to Felthousen & Russell in the sale of ship lanterns and ranges, and other marine hardware. Mr. Russell, father of the present member of that name in the firm, spent several years experimenting with lenses which should increase the power of ships' lights, and which would give the proper tints to the side lights. He had more or less trouble in getting glass which suited his ideas as to the requirements of a starboard light until he visited the manufacturers in person. While walking through one of these establishments, Mr. Russell found a piece of colored glass lying on the floor, and picking it up held it between himself and a gas burner in a gloomy corner. The glass was blue, but the yellow light shining through it gave the rich green tint he wanted, and which shows up so well in proportion to the red light that this tint is the most popular on the lakes. He at once placed his order for lenses of this tint, and the firm has ever since been most successful in their sail. The ranges in which this firm deal are especially adapted for cooking in rough weather. They also carry the Stamford tug and yacht galley stoves. Both members of the firm are comparatively young men, and their pleasant, straight-forward manner of dealing always retains their trade. The accompanying illustration shows the interior of their well-arranged store.

LITERARY NOTICES.

Cassier's Magazine for January is a greatly enlarged number, devoted almost exclusively to the subject of electricity of which treats in all its phases. The contents are as follows: "Municipal Light from Underground Mains," by E. J. Houston, Ph. D., and A. E. Kennelly, Sc. D.; "Gas Engines for Electric Light and Power," Nelson W. Perry, E. M.; "When it is Advantageous to Use Water Power and Electric Transmission," Charles E. Emery, Ph. D.; "Coalless Cities," Prof. Francis B. Crocker; "The Induction Motor," Dr. Louis Bell; "Electricity for Propelling Railroad Trains at Very High Speeds," Hiram S. Maxim; "Electric Pumping Machinery," Charles A. Hague; "A Letter to Benjamin Franklin," Park Benjamin; "The Direct Production of Electrical Energy," Dr. Louis Duncan; "Electrically Operated Factories," R. E. B. Crompton; "Electric Power in Canada," J. S. Robertson; "Electricity in 1895," T. Commerford Martin. Each of these papers is accompanied with a full page portrait of the author. The frontispiece is a portrait of Benjamin Franklin, and another authentic picture of him accompanies Mr. Benjamin's article, which is full of interest.

The Arena for January has just made its appearance, with the usual store of good things. Among its best articles are a symposium on government control of the telegraph, by Lyman Abbott, D. D., Postmaster General Wilson, and Prof. Frank Parsons. Dr. John Clark Redpath writes an initial paper on "The Bond and the Dollar." Celia Baldwin Whitehead and Estelle Bachman Brokaw discuss the single tax, and Frances E. Russell comes in with "A Few Notes in Reply." "A Universal Ratio" is a paper by Robert Stein, illustrated with portraits of leading American and European bi-metalists. The January installment of personal recollections of the great poets comprises a few latter day notes on Walt Whitman, by Horace L. Traubel, and a glimpse of Longfellow, by Rev. Minot J. Savage. Literary numbers, papers on occultism and book reviews complete the issue.

The anniversary number of the Iron Trade Review is a very attractive magazine, containing, without encroaching upon the space regularly given to current news, an illustrated article upon the iron works of the Mahoning Valley with a page of portraits of blast furnace and mill owners of this region. Another page contains portraits of representative firms of the machinery manufacturing firms of the United States, and a number of special illustrated articles on live subjects complete the number.

The Duluth Tribune has just issued a very elaborate industrial number, which give a thorough idea of the importance of Duluth from a commercial and manufacturing standpoint. It is well illustrated, both in the work and in the selection of its subjects. The number is enclosed in a handsome colored cover.

The January issue of the Central Magazine, Cleveland's thriving infant, is the best number that has yet appeared, and every article is full of interest. Antranig Azhderian, an Armenian, writes of life in Asia Minor, dwelling chiefly on interest domestic life. The paper is well illustrated, and thoroughly instructive. "Manual Training in the Public Schools," in which branch of education Cleveland stands so high, is treated of by Lewis C. McLouth, "Civic Morals in Education" is another valuable paper, by Judge Henry Clay White, and the literary features are of high grade.

The American Shipbuilder announces the publication, within the coming week, of Howell's Steam Vessels and Marine Engines, being descriptions and illustrations of some of the principal shipping built in the United States during the past five years. Also a number of portraits of men prominently connected with the marine interests.

The Calumet & Hecla company has sold 10,000,000 pounds of copper at ten cents for January delivery.

HOW LIVE-STOCK IS SHIPPED AT SEA.

BY WALTER LODIAN (FORMERLY CALCUTTA).

Special Correspondence to The Marine Record.

VLADIVOSTOCK, SIBERIA, Dec. 12, 1895.

Quite a growing and healthy increase has there been in the export of live-stock from Australia and New Zealand to India and other parts of the orient—as, for example, of late to Japan—and it is important, in order to aid in further developing this industry, and improving the animal shipping trade, that readers of THE RECORD in America, Europe, Australia, India, Africa, and elsewhere, who may be interested, should learn all about the matter. From different parts of Africa there is a big yearly shipment of stock to various parts of the globe; and as the shipping conditions are nearly identical with those existing on other trade routes, readers will get a good idea of what the African business is like.

The need for a complete article like this is apparent. So many horses and other stock—military horses, noted race horses, stallions, and divers blooded stock, farm horses and cattle in general, cows, sheep, pigs, etc., are now sent over the different oceans to the world from country to country, that any reliable information in regard to the proper shipment and treatment while aboard, is very welcome. There has been an enormous increase in recent years in stock shipments, and it is estimated that the floating stock population currently in transit on the different seas of the globe exceeds—counting all categories—half a million head. It too frequently happens that men are sent off with stock on a long sea voyage, quite ignorant of what their requirements may be while afloat. They are shipped as if they were going on a land journey, and it is a grave error to thus send off valuable cattle with care takers inexperienced, both theoretically and practically.

This article cannot instruct practically. The business is to be learned by actual work, long and hard, among stock at sea. But it may set forth and explain some theories, and if it accomplishes that, will be more than half the battle. There is enough material on the subject to fill a book, which could and should be profusely illustrated. The article will be of special interest to the insurance world generally. They need to know something about the animal shipping business, because so far they have been insuring “in the dark,” writing risks while ignorant of their exact nature. It is a matter of surprise that this important subject has not—to the best of the writer’s belief, after much research—been treated upon in any horse, stock, agricultural, sporting, military, shipping, or even general publication; yet, as will be shown, it is a big item, of extreme utility and interest, to those of THE RECORD’S readers who are interested at all, and it will behoove authors of books on the horse, as well as book compilers, on the other subjects just indicated, to in future devote a chapter in their works to the horse and other stock at sea, as information in this respect is frequently and increasingly in request. Perhaps one reason for this peculiar omission has been the question of expense—the difficulty and cost of patiently inquiring into and expressly shipping with stock in order to write authoritatively on these matters. The writer’s expenses over the present paper exceeded \$1,000, and represent over 40,000 miles of travel with stock. This article has been more than six months in actual preparation.

A few words about how horse fares are paid. The fare or freight of a horse or other live-stock is never paid in advance. Regular cattle boats are here referred to. There may possibly be exceptions here and there, but your correspondent has not heard of such. The general written contract is to only pay for, at the end of the voyage, such cattle as are landed alive. Old and not over-particular shippers take care that no dying stock is landed nor those so knocked about and weakened by a rough trip as to be useless if landed. They quietly make them die a day or two before entering port, and will even throw a sheep or other “unconsidered trifles” overboard in a dying state. In the case of insured stock the captain is always notified of a death, and he will “make a note of it.” The company supply stalls, feed-bins, and water free, and get the horses off and on board—only to and from piers or lighters—but the shippers have to supply all feed, medicine, halters, hostlers’ help, etc. At the great remount depot near Calcutta, covering some 50 acres, army horse shippers and their hostlers are given free quarters on the spot while their horses are there, and the horses are housed

free in the roomy and well-built brick stables, which are thatched and sometimes zinc-roofed. The average declared value of nearly 22,000 horses shipped for military, racing, stud, farm and general purposes from Australia to India—by which comprehensive word is meant India, Ceylon, Burmah, Straits Settlements, Siam, the Java semi-republic, Borneo, the Philippine Islands, the French Republic’s possessions in India and environs, and the numerous islands all about—was £22 per head; but these were merely shippers’ declared values, and as they would declare just what they liked on almost all uninsured stock, the declared values are not of much account. Maybe the average value, reckoning all conditions, was £10, and the prices sold at in India anywhere from £30 to £50. Perhaps the greatest and most important stock trade in the world is that between Australia and India—due principally to the annual supplies for the Indian army. There are four steamship lines running out of Melbourne in the interest of the horse-carrying trade—the A. Currie monthly line; the MacIlrath line (small); the British India Concern, and occasionally the Hodart-Parker line, who have the best coast service in Australian waters.

Getting horses and cattle on and off steamers is an operation which can be watched for hours with interest, especially where the sling is used. It is hard work for all concerned, and requires great patience. Horses which are being shipped by the centum are driven aboard in dozen lots down a roughly constructed plank up gangway, thrown together by the ships’ hands. This is where the loading is done from a pier. When there is no pier the horses are brought alongside on lighters, and the sling and steam winch are set at work. Horned cattle used to be slung on and off by these projections, and didn’t seem to object to it; but but the inconsistent S. P. C. A., which is down on every poor, helpless devil who can least afford to pay, for a trivial offense, yet which dares not prosecute the horse-docking rich man, stepped in and put a stop to it.

Landing stock is a repetition of the same process the other way about, except that at a pier the horses are not driven out in groups, but are led or slung out one by one. See them kick as they are hoisted out of the narrow stall in which they have traveled for a month or two. They often continue their antics for a few minutes only, but sometimes they struggle so violently that the barge lists sufficiently to cast them overboard. They might be drowned or have a leg taken off by a shark but for the sling, which is not removed until they are quite calm on the barge. The signal is given, the horse is drawn out of the water like a soaked rat, and is again placed on the barge. The experiment of dropping horses overboard and letting them swim ashore has not proven successful.

The stalls provided for horses and cattle aboard ship are of the roughest description, though strong. The battens laid on deck, to prevent the cattle from slipping, are of extra hard wood. Nothing but battens will do to prevent horses slipping in rolling seas—ashes and clinkers from the furnace room of the steamers are useless, if used alone, and the clinkers injure the feet. Before laying the battens the deck, if it is the upper deck, is covered with boards for its protection, and to these the battens are secured. Then the stalls are run up, with two removable planks between each two, and covered with boards, if the decks are exposed to the sun. The width of the space allowed each horse is a few inches more than two feet. It would be unwise to give the horses more room, as the planks are a support to them during the pitching of the vessel. Some fancy stock, like noted racers, etc., secure especial padded stalls. For cows, over four feet is given, as they can lie down comfortably. Pigs and sheep are huddled together rather closely. Horses are always placed athwartships, head inwards. The center rows are placed tail to tail, with sufficient kicking latitude. Each horse carries throughout the voyage a halter and a rope. Attached to the halter on each side of the mouth is a chain about 18 inches long, which is affixed by a staple to each of the two posts of the division. This prevents the horses from biting one another—something they are very prone to do on seas, and provide to some extent against falling. Occasionally horses which have become weak on their legs are allowed a belly-sling. This is usually made of compressed paper, made by an American hard fibre concern in Wilmington, Del., and which, while far superior

in excellence, is only half the weight and price of leather.

The finest modern stock boats are those of the A. Currie line, of Melbourne, Australia. These are built especially for the trade; are commanded by captains who are themselves, by reason of long experience, veterinary surgeons of a modest sort, and carry also a limited number of third and first-class passengers. The typical horse-boat is about 2,000 tons burden, with about 250 h. p., and travels at the rate about ten knots per hour.

The help required for tending stock on shipboard varies. For every 20 horses a hostler is, or should be allowed. These hostlers are frequently very tough characters, with scant trained knowledge of horses. Sometimes their work is not all poetry. They are allowed from 35 to 55 shillings per week, and have their passage paid back to port of shipment. The hostlers, once the horses are aboard, have little to do, if the trip is a smooth one, except to feed and water the stock. The cleaning out is done by the deck hands with a steam-driven hose. The hostlers travel third-class, while the shippers travel in the salon. Sometimes the hostlers ship without pay, in consideration of their passage; but this sort of help usually proves the costliest in the end.

Accidents may happen to cattle at sea—from a nasty contusion to a broken leg. In the latter case the animal is given its quietus, and hoisted overboard. If a long period of rough weather is experienced, there will probably be bruises galore, and Stockholm tar is the usual application. Sometimes during these troublous spells a few horses will somehow manage to work loose, and accommodated by an abnormal rolling, fall completely on their backs. It is quite a job to get one on its feet again, as, perhaps, a dozen other horses have to be shifted in a narrow gangway in order to get at the one which is down, so as to give him space in which to struggle up again. This means the taking out and replacing of many partition planks, working among affrighted young horses, to some of which it is a sweating task to budge; and then when the horse is up, all this work has to be done over again. This is one of the worst troubles of marine equinal life, and makes those who have to take part in it more profuse in bad language than a London fireman, especially if it occurs during the midnight hours, causing the men to turn out of their snug bunks into perhaps a howling, black, raging wet night. Another common occurrence is for the horse to get a leg over one of the bars; but this is soon remedied by taking out and replacing the bar. Horses, however, find their sea-legs quicker than many human beings, for the former are not liable to seasickness.

Feeding, watering and cleaning stock on board are the chief events of routine life on a horse-boat. And very monotonous it becomes after about ten days. Feeding is done four times daily—say, 7:00 and 11:00 a. m., and 3:00 and 6:00 p. m. Feed consists of hay, chaf, oats, bran and linseed, according to the judgment of the shipper. Race horses, of course, usually come in for better fare. A horse will consume about 25 pounds daily. Water is given with every feed, each horse being allowed six gallons per diem. Watering from troughs is impossible without great waste and so highly valued is water aboard ship, that it is frequently the cause of strife between stock shippers and the ship’s officers. Medicines required at sea for horses and live-stock in general are not many. They are principally for throat affections, for opening the bowels, or for relieving ailments of the respiratory organs. The usual horse oils and bandages must be carried; colic drenches, fever drinks, nitre, for the water, salts, etc. Every experienced horse-shipper with a little sense and a little knowledge of chemicals and oils, makes his own simple remedies at a cost of a few shillings, where an ignoramus spends pounds over so-called patented stuffs, with the additional advantage that the former knows the nature of his remedies and their purity. Diseases likely to occur at sea to army, racing, farm and stud horses and to cattle are tonsillitis, fever in the feet, sometimes extremely bad, aggravated by five to seven weeks’ unceasing stand, and often obstinate to cure; also costiveness, stiff joints and lung congestion. The last is at-times alarmingly prevalent, and is in part due, if below deck, to the stench of ammonia and the lack of fresh air. There is little hope of curing this

disease. It appears to be more rapidly fatal at sea than ashore, and decomposition sets in with appalling rapidity, causing a nauseating odor to pervade the steamer.

Disposing of cattle dying aboard is a rather interesting operation, though far from being attractive to the uninsured shipper. The steam winch is promptly brought into requisition, and the remains hoisted out by tackle, swung to the side, and dropped overboard. The body floats, a feast for the fishes. The engines are stopped for a few minutes, in order to avoid any fouling with the screw.

About as many shippers insure as do not. In policy-holding on horses shipped, the usual charge is 5 per cent for totality, and 8 per cent for mortality. Totality, is for total loss of ship and horses, and even if one horse out of 100 gets ashore alive no insurance is allowed. So shippers are careful to see, if there is a totality, that it is a total loss. Mortality, is so much per head, and the amount insured varies according to agreement.

Preparing horses for sea is highly important. Of course there are always uninsured losses to be provided against. Nowadays it is considered bad to lose 10 per cent. But horse-shipping is done so well at the present day that there is practically no loss, unless long spells of bad weather are encountered. This comparative immunity from loss is due to the simple process of preparing the horses on land for the long sea-voyage before shipment. This consists in taking them from the fields and stalling them a couple of weeks or so before shipment, also giving them for food the maritime diet—thus accustoming them to the sea-life before going aboard.

To horse and live-stock correspondents, or those desirous of more information concerning the shipping, insurance, etc., the author would say that he will be at all times ready to reply to inquiries, whether addressed direct to "Rodian, 12 Post Rest, Vladivostok, East Siberia," or through THE RECORD. Those wanting direct replies of only personal interest will please enclose ten stamps. Postage is 5 cents under ½ ounce. Most Americans are provokingly ignorant in fancying that two cents will carry their letters all over the universe. Weigh your letters before sending; insufficiently stamped mail is refused.

After wintering in the most southerly Pacific port of Siberia until Korea—another of Russia's geographical necessities—becomes a Moscovite province, the writer proceeds in the early spring on the long and circuitous 8,000-mile overland journey to Paris.

WALTER LODIAN.

TUGS IN WINTER QUARTERS.

Tugs laid up at Buffalo are the Acme, Alpha, W. I. Babcock, James Byers, Cascade, O. W. Cheney, Conneaut, Grace Dauforth, Fabian, S. W. Gee, R. H. Hebard, John Kelderhouse, and E. C. Maytham.

The following small craft are in ordinary at Lorain Tugs Cascade, Selah Chamberlain, Oscar Fobson, O. J. True, Snsie B., Ciscoe, Daisy, and W. H. Moore, dredge Continental, eight scows, five pile drivers, three derrick scows and one freight lighter.

The list of tugs laid up at Port Huron comprises the Jim Butler, Dan Runnels, F. J. Haynes, James Adams, W. W. Richardson, A. Sumner, Crosby, J. C. Ingram, Kittie Haight, J. P. Clark, George Brockway, Sprite, and the dredges of R. J. Cram and McCullum & Lee.

Tugs in winter quarters at Sheboygan, Wis., are the Sheboygan, Satisfaction, Fearless, Carrie Currans, and M. & M. The Gunderson Bros., Carrie Walter, Elizabeth G., Louisa M. for Koehn and Hoffnung Bros. are fishing out of that port.

Tugs laid up for the winter at Oswego are the Charles Ferris, Cornell, John Navaugh, May Queen, Drake and and William Avery.

The new Hydrographic Office Chart of Lakes Erie and Ontario, is something no master sailing the lower lakes can afford to be without. It contains the latest information regarding depths of water, compass variation, lights and fog signals, and includes Lake St. Clair and St. Clair and Detroit Rivers, besides the lower end of Lake Huron, the southern part of Georgian Bay and all of Saginaw Bay. These charts can be obtained at the office of THE MARINE RECORD, No. 144 Superior street, Cleveland, at 75 cents each.

NEWS AROUND THE LAKES.

CHICAGO.

Special Correspondence to The Marine Record.

Fred G. Rogers, chief engineer of the Lehigh Valley Line of steamships is in Chicago this week.

C. E. Benham, Ex-Congressman W. J. White and Capt. Joseph Todd of the steamer Say When, of Cleveland are paying a visit to this city this week.

Capt. G. William Chamberlain has been appointed master of the steamer Adella Shores for next season.

Capt. Thos. J. Beggs has been appointed master of the steamer Niks, towing the barge Churchill. This tow will do well under that congenial captain's frugal management.

At a meeting of Chicago Harbor No. 33, of the Masters' and Pilots' Association, held Thursday afternoon, January 2nd, at their hall at the Le Grande Hotel, the following officers were elected for the year 1896: Capt. Chas. Hall, captain; Capt. E. J. Buscay, first pilot; Captain Dacodus, second pilot; Capt. A. C. Johnson, captain's clerk. Captain Geo. Tebo was elected as delegate to attend the annual convention of the Grand Harbor, to be held at Washington, D. C., on January 22nd. Capt. James Shea was initiated as a member.

The schooner Churchill was chartered by Captain John Prindiville for corn at 2½c., for storage and delivery at Buffalo in the spring.

Only 2½c. per bushel on corn is the freight for winter storage and delivery, was offered on Tuesday, by shippers.

2½c. on corn was the ruling freight last week, and vessel agents, on behalf of owners, refuse to take less, as they consider that with the enormous quantity of corn to be forwarded from the western states, freights should be considerably higher later on.

W. J. Wilson, assistant in charge of the branch Hydrographic office at this port gives notice as follows: "Mr. Bronson, Pilot of the U. S. Revenue Cutter Calumet, has reported to this office the existence of a very dangerous obstruction, having twelve feet of water over it at the entrance of the Chicago River. It is supposed to have been material dumped from scows, and he was unable to determine the exact nature of the same, when he located it." The obstruction covers over a distance of about 200 feet running east and west, and lies about 165 feet north of the return portion of the easterly breakwater facing the river.

The Dunham Company towed the steamer John Plankinton to her winter dock Tuesday morning. The Plankinton loaded grain about two weeks ago, and when going up the north branch of the river got on the bottom just above Chicago Avenue bridge, where she remained until Tuesday. They towed the steamer Chas. A. Eddy from Cox Bros.' coal dock to near Madison street to her winter quarters, and towed the schooner H. D. Alverson to Cox Bros.' dock to unload.

The Independent Tug Line towed the barge Galatea Thursday, and the barge Churchill on Saturday to the Rock Island Elevator to load corn. They towed the steamer E. C. Pope from South Chicago Saturday, and the steamer City of Genoa to the Youghiogheny Coal Co's Dock on the North Branch. They started to tow the schooner Mary McLachlan to South Chicago Tuesday morning, but were prevented by heavy drift ice which they encountered off 18th street, and returned to port. They will tow the barge Iron Cliff from South Chicago to this port. They towed the schooner John Martin from Hines' lumber yard Slip to the Burlington Slip to her winter quarters.

WILLIAMS.

BUFFALO.

Special Correspondence to The Marine Record.

Capt. M. M. Drake has been appointed a member of the commission of Public Works. Capt. Drake's thorough knowledge of Buffalo's harbor needs, and also of the requirements of the lake and canal shipping interests, makes him a valuable member of the board, and an influential advocate of necessary improvements.

The old schooner Columbian, which was sold at U. S. Marshal's sale here last week, brought \$300, being bid in by Walter E. Chilson, a relative of the owner.

There is a great deal of uncertainty as to what caused the death of a great number of fish which are being thrown ashore at this end of the lake as far west as

Angola, N. Y., and Crystal Beach, Ont. Many of them are gilled, but others show no marks of disease or violence.

An ice bridge has formed at Niagara Falls.

The real estate exchange has declared by resolution for the construction of the Stony Point breakwater, and for an appropriation of \$200,000 for deepening the Niagara river as far down as Tonawanda.

PORT HURON.

Special Correspondence to The Marine Record.

Colin McLachlan will leave next week for Chicago with a gang of calkers to work upon Mr. McLachlan's boat.

The schooner Fanny Campbell was sold by the Canadian court in admiralty for \$650.

Captain Ryan, bridge tender, reports that the bridges were turned 2,020 times during 1895, as follows: Military street bridge, 1,513; Seventh street bridge, 507.

The lightship has been moored at Jenkinson & McMorran's dock for the winter.

KENDALL.

DULUTH AND SUPERIOR.

Special Correspondence to The Marine Record.

Congressman Towne, who has been appointed a member of the House Committee on Rivers and Harbors, has written to friends here that he hopes to be able to accomplish a good deal for the head of the lakes this session. He expects to introduce a bill providing for the establishment of a branch hydrographic office here.

The Duluth & Iron Range Railroad Co. has let a contract to the Barnett & Record Co. for the erection of another iron ore shipping dock at Two Harbors. This will be the fifth dock built by the company for the shipment of iron ore. It will be 1,600 feet in length, and over 6,000,000 feet of lumber will be used in its construction. The addition of the dock to the already existing facilities for shipping iron ore, will make Two Harbors the largest ore shipping port in the world.

CLEVELAND.

Mr. E. P. Motley, of the Thunder Bay Island Life-Saving crew, is spending the winter with his brother, Capt. Charles Motley, of the Cleveland crew.

Mr. C. Louis Allen, was married at Sault Ste. Marie, Mich., Wednesday, to Miss Ella Campbell of that city. They will live at No. 44 Root st.

Mr. J. R. Oldham has the sympathy of all in his late bereavement in the death of his daughter, Miss Nellie, who passed away very suddenly on New Year's day. Miss Oldham has assisted her father in his office for three years and more, and was personally well known to many of the lake fraternity.

The annual meeting of the Ship Owners' Dry-Dock Company was held Wednesday. The following directors were elected: Thomas Wilson, Robert Wallace, J. E. Upson, Valentine Fries, George Stone, H. D. Coffinberry, and H. D. Goulder. The old officers were elected as follows: Thomas Wilson, president; George Stone, vice-president; George L. Quayle, secretary, treasurer and general manager; Gustav Cold, assistant general manager; H. D. Goulder, general counsel. A 3 per cent semi-annual dividend on stock was declared.

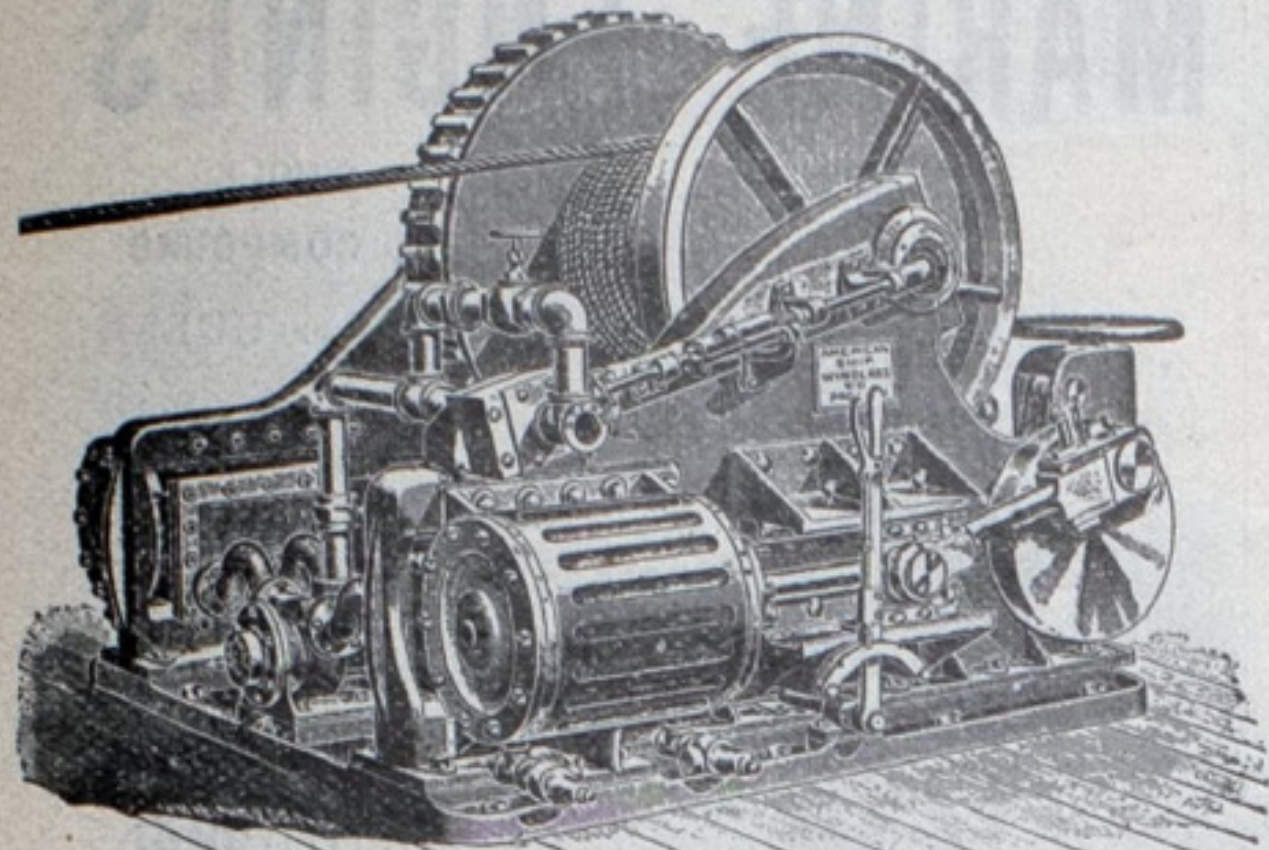
The firm of Hawgood & Canfield, vessel brokers, has dissolved. Mr. W. A. Hawgood will continue the business.

The annual meeting of the W. & M. Railroad Co. will be held at Marinette in January. The directors will submit a proposal to extend the road from Faithorn Junction to Florence, Mich., penetrating the Menominee range. This will greatly increase the transportation facilities of this range.

THE RECORD is in receipt this week of a number of handsome calendars, including one from George B. Carpenter & Co., ship chandlers and sail makers, Chicago, four with excellent reproductions of classical paintings from the Roberts Safety Water Tube Boiler Co., New York; and one from the Penberthy Injector Co., Detroit.

The "Soo line" which is owned by the Canadian Pacific, contemplates the absorption of the Wisconsin & Michigan and the Lake Michigan Car Transportation Company. This will give C. P. an entrance into Chicago and will have a marked effect upon the freight traffic.

The Shaw & Spiegle Patent Steam Towing Machine.



Patented June 5, 1888, and July 16, 1895.

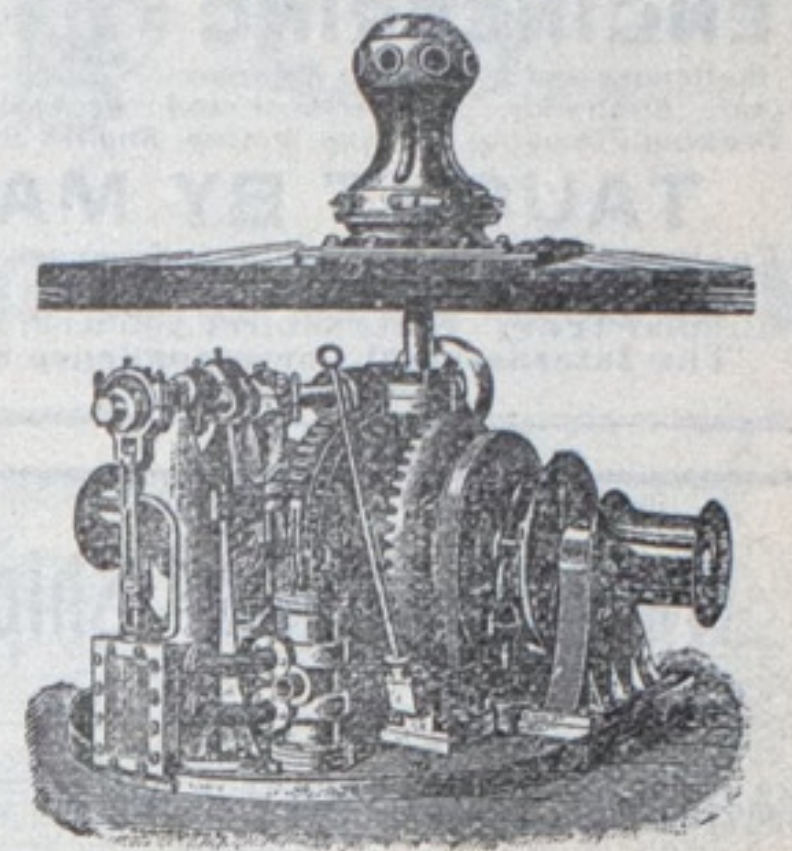
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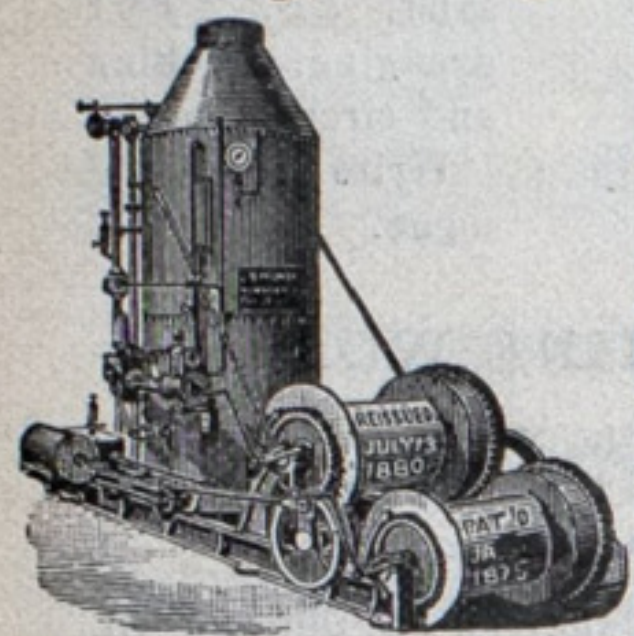
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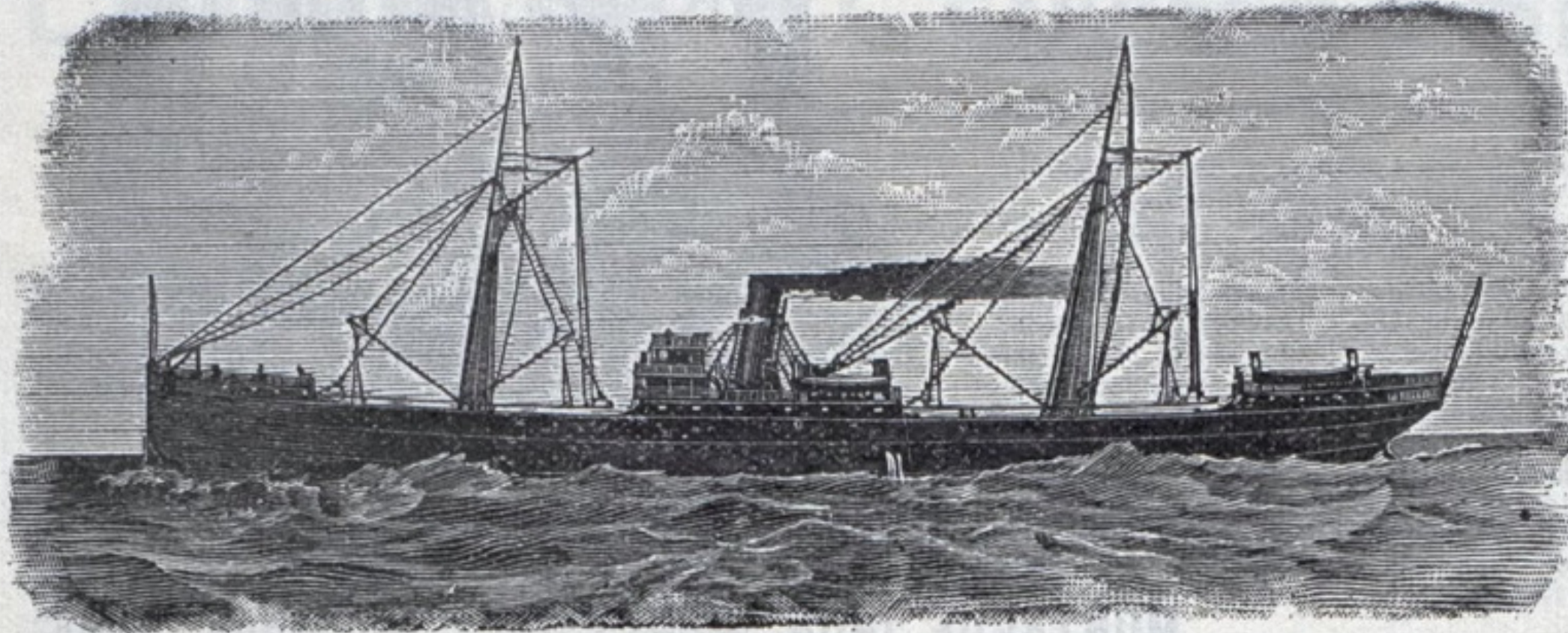


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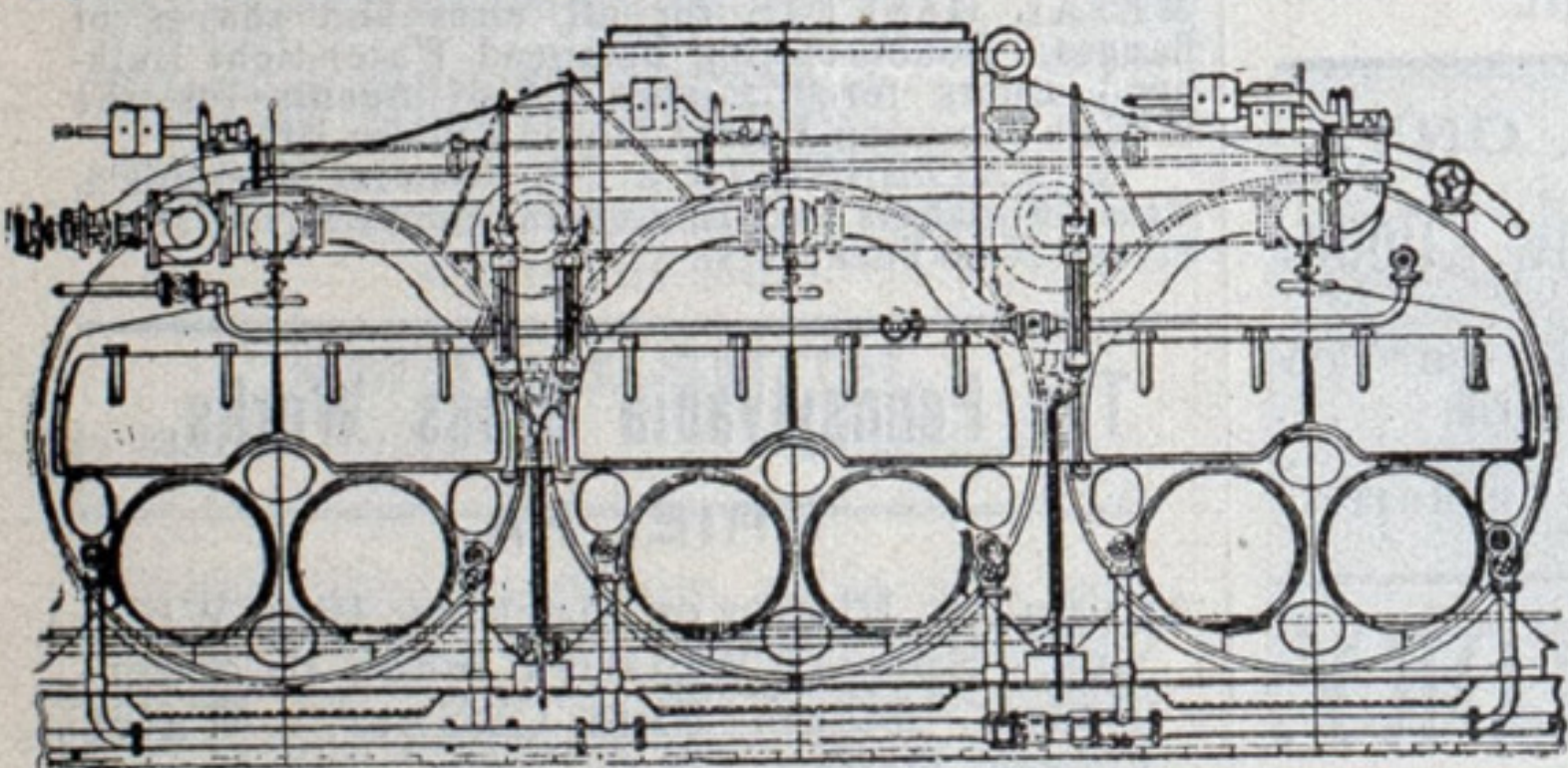
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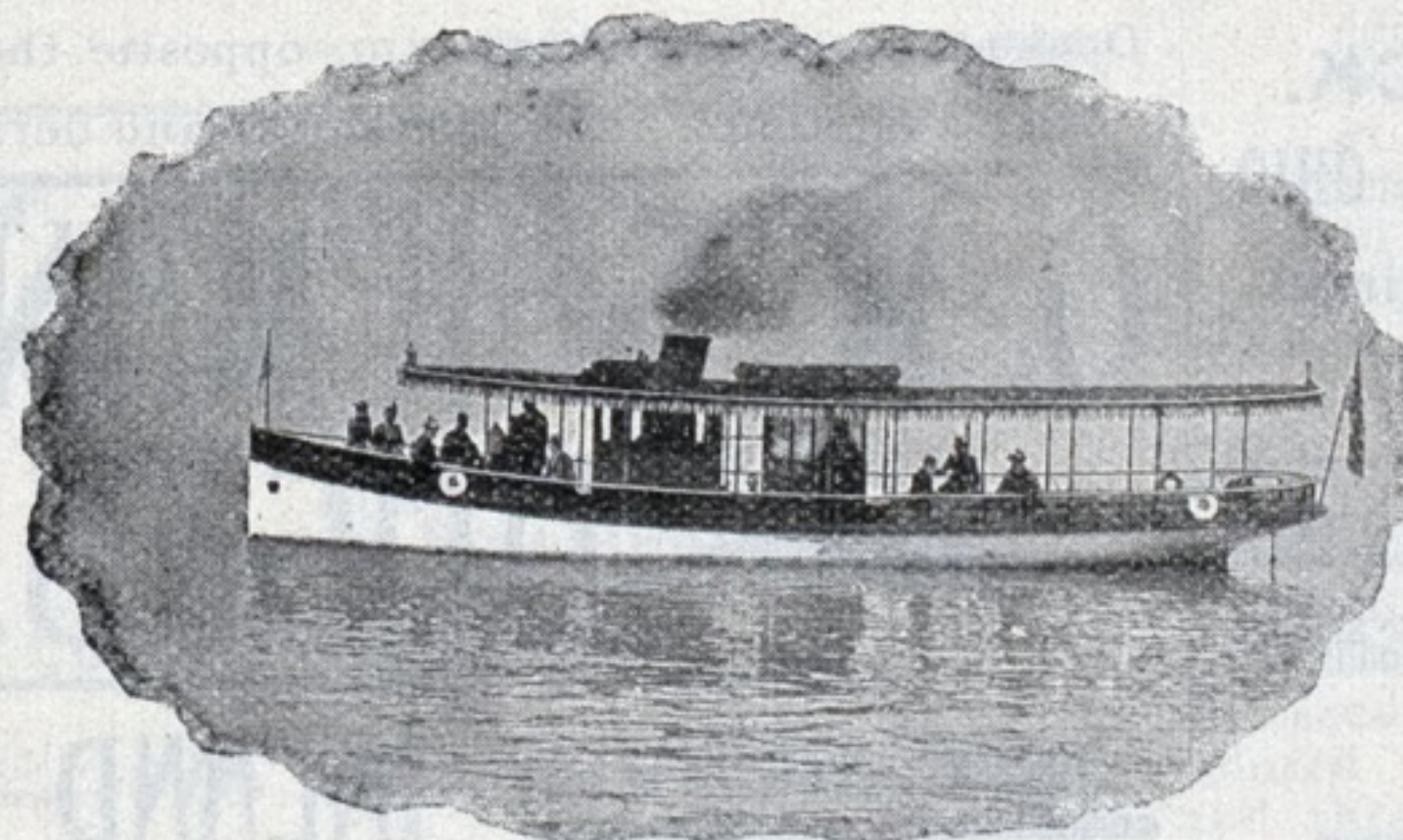
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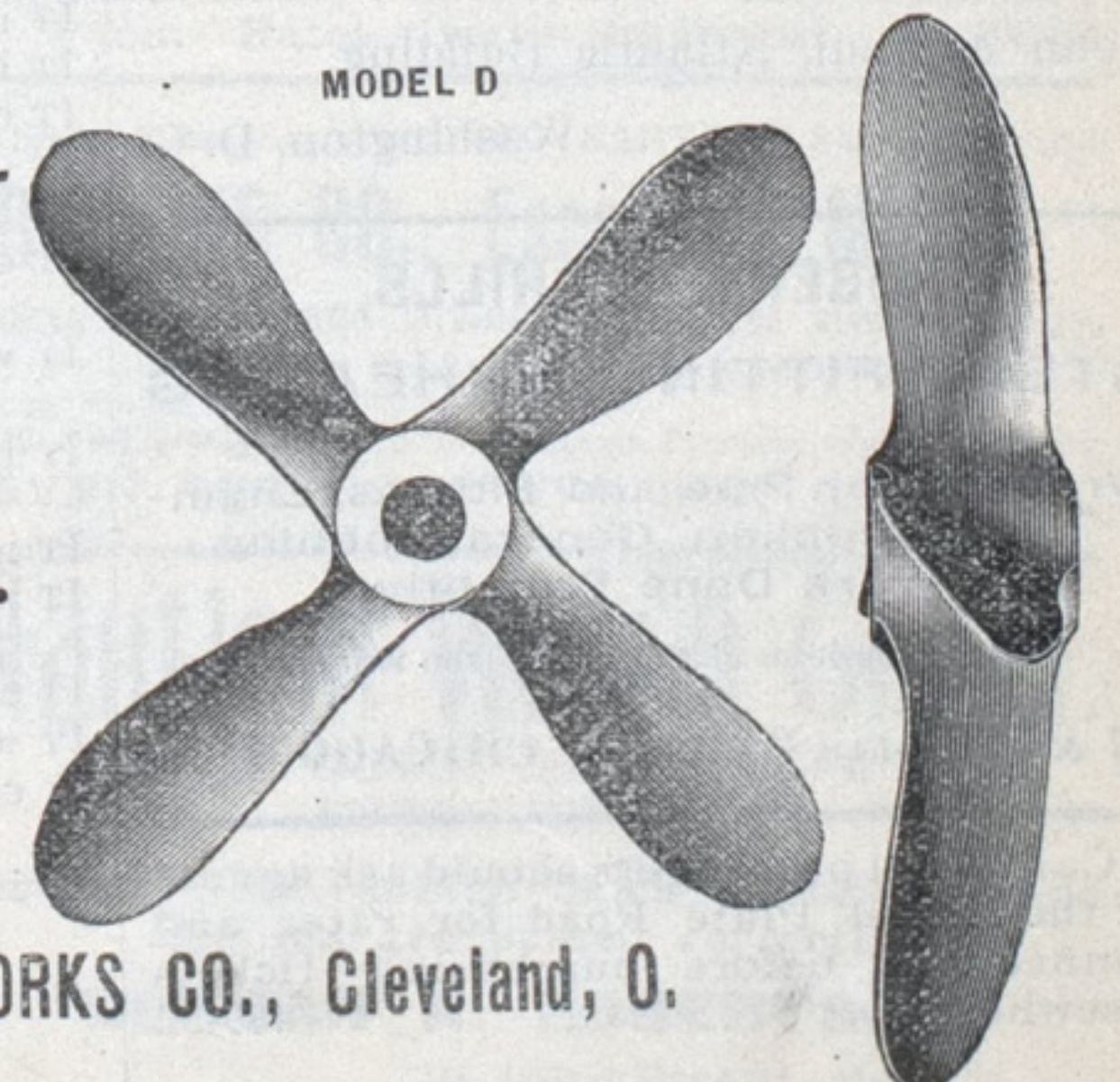
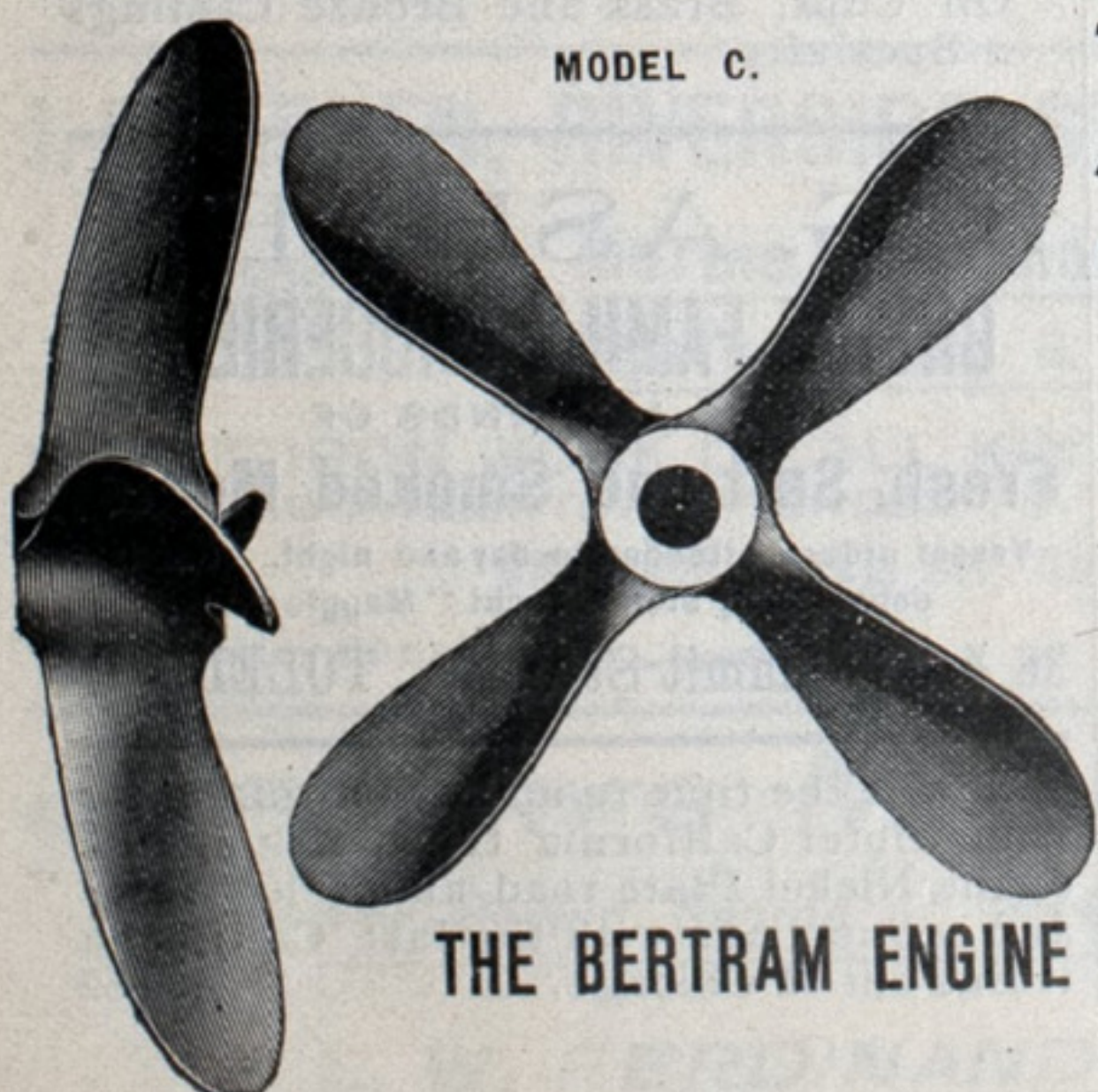
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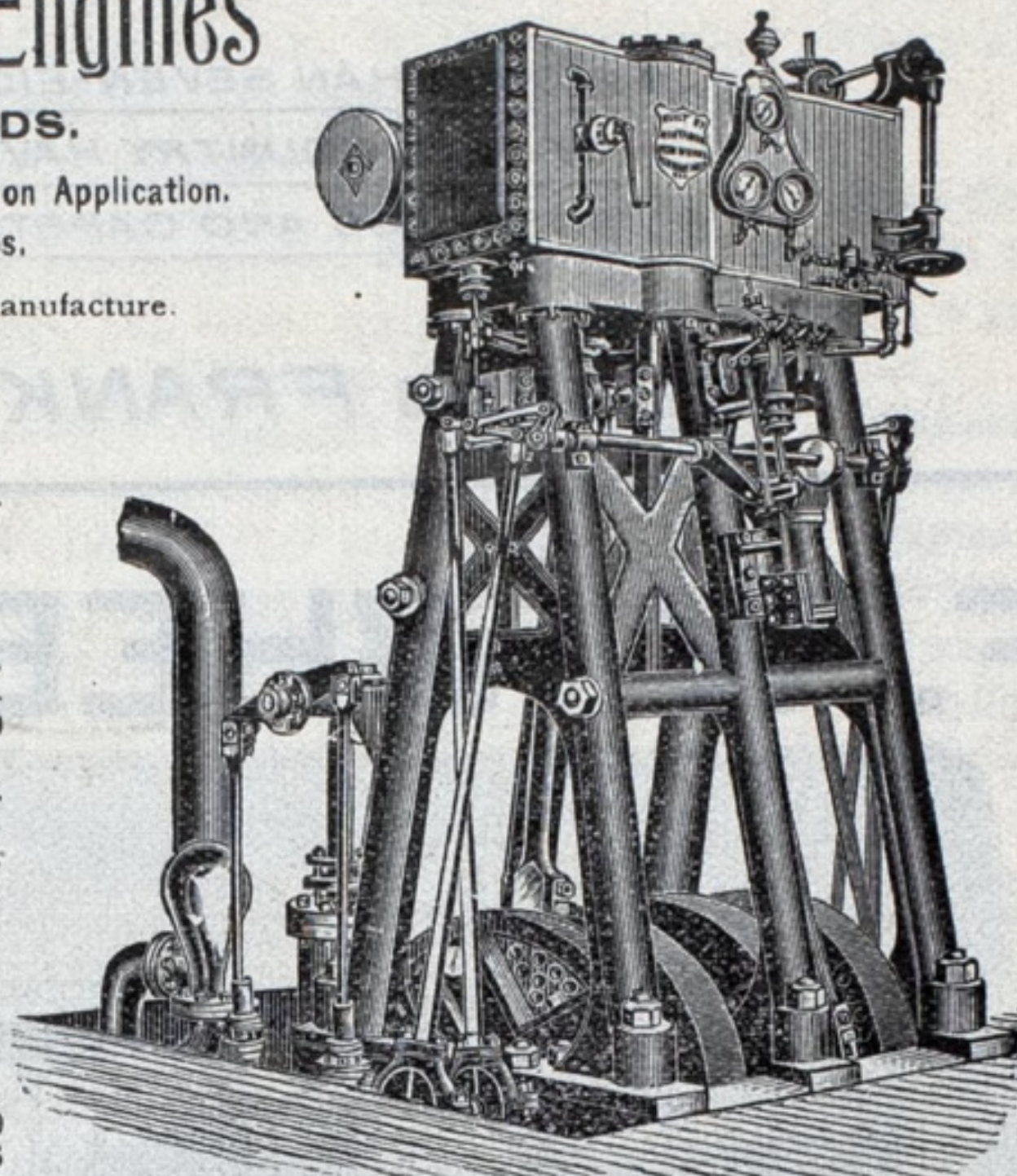
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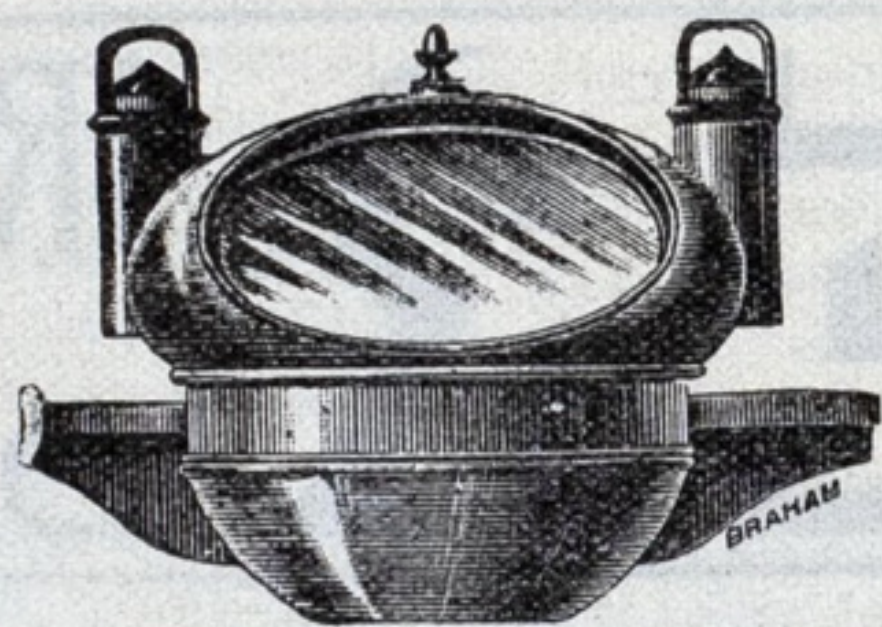
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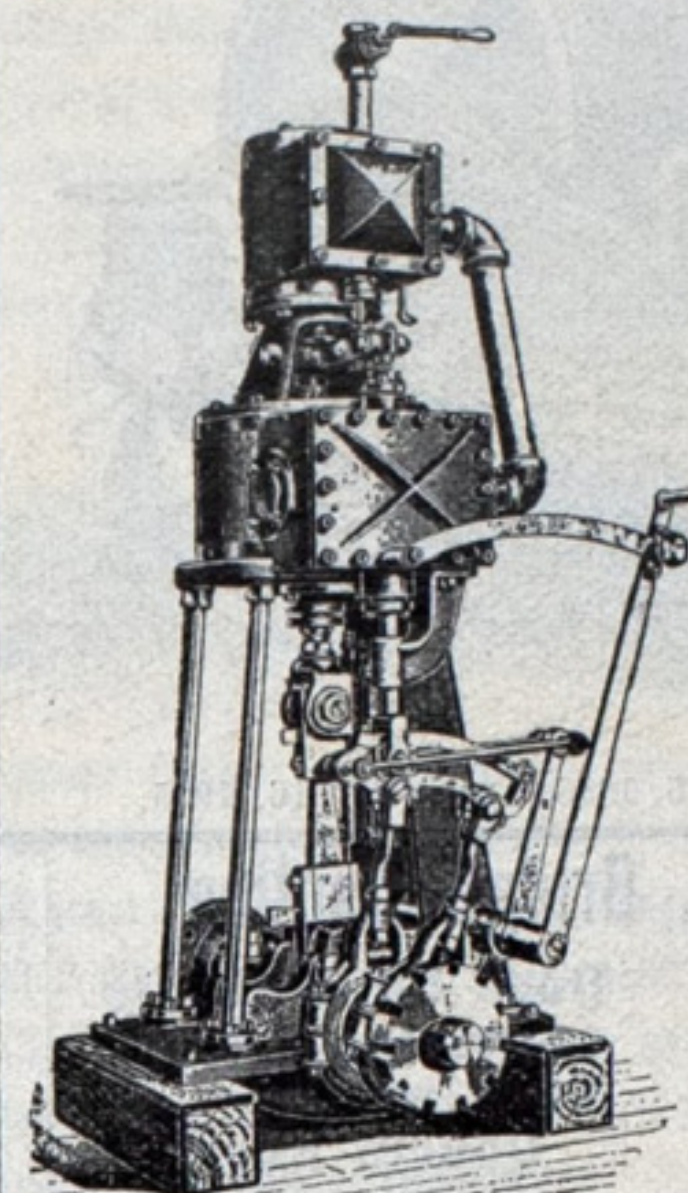
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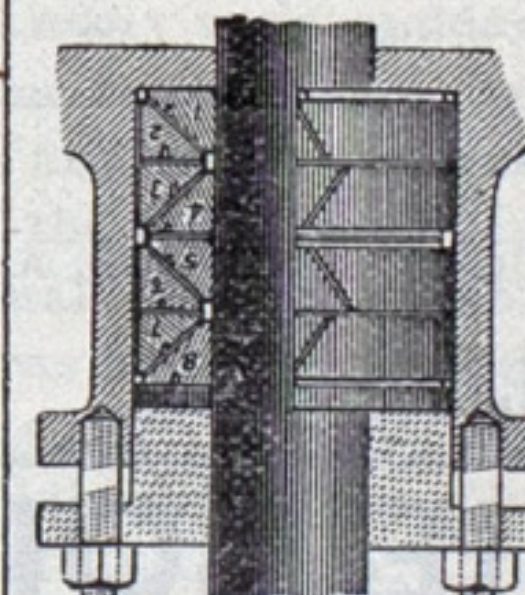
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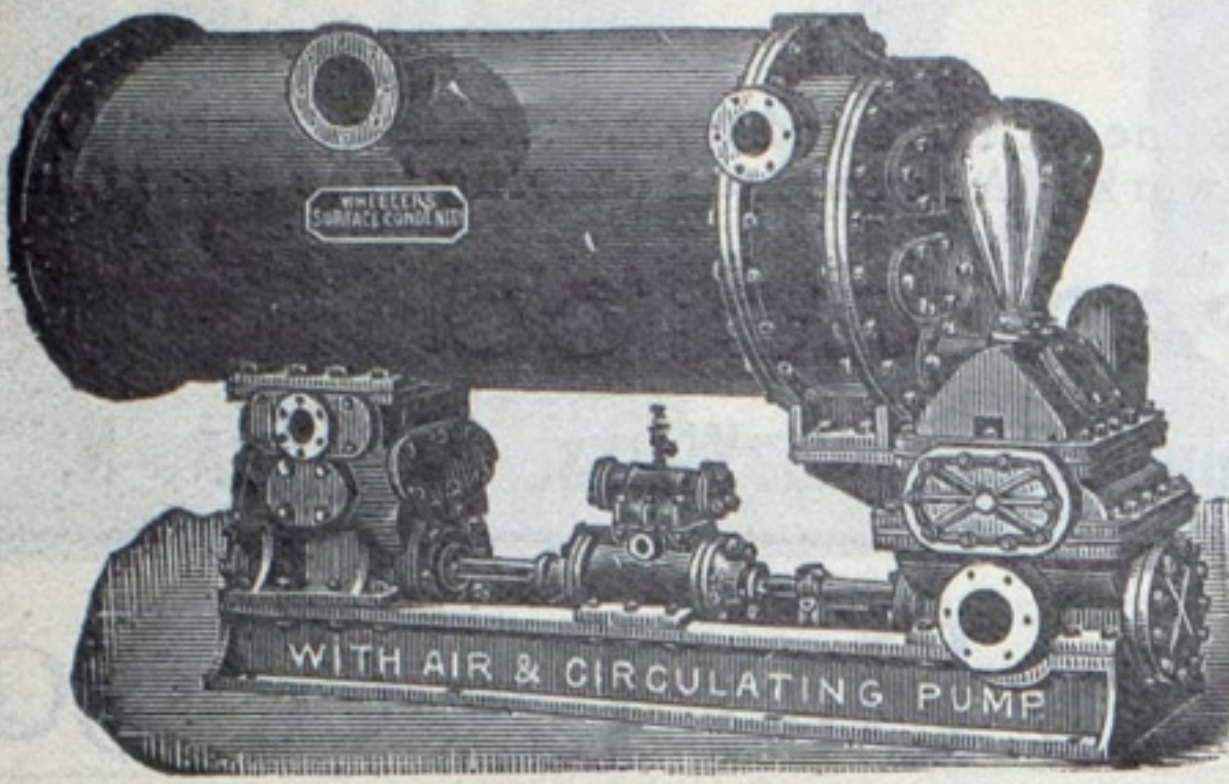
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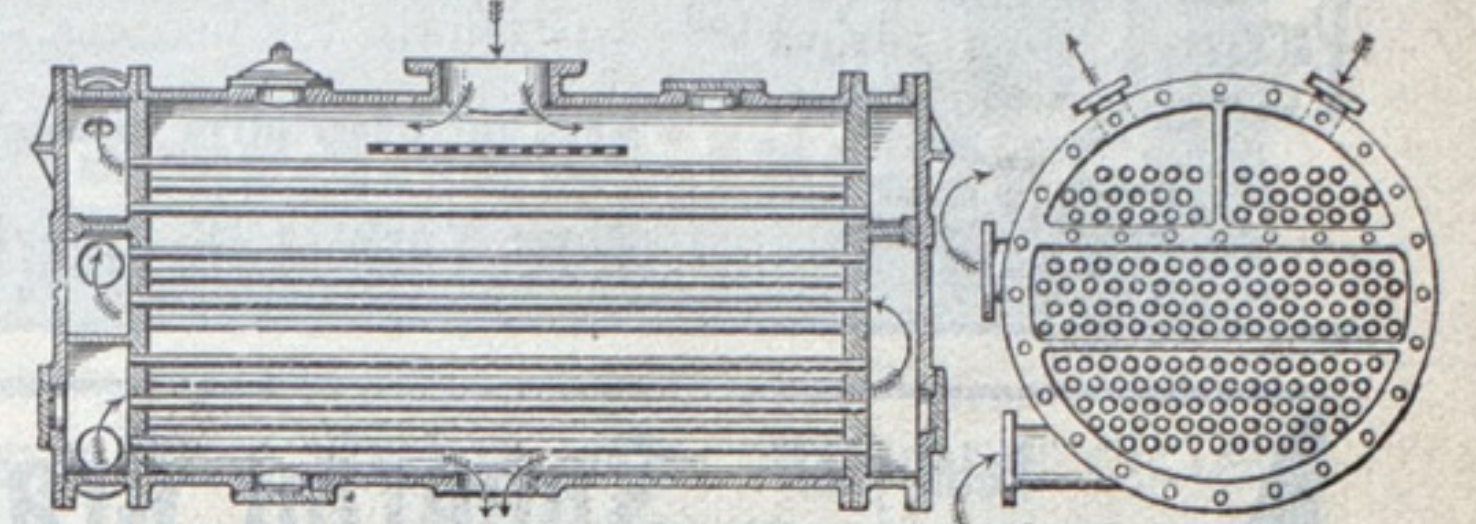
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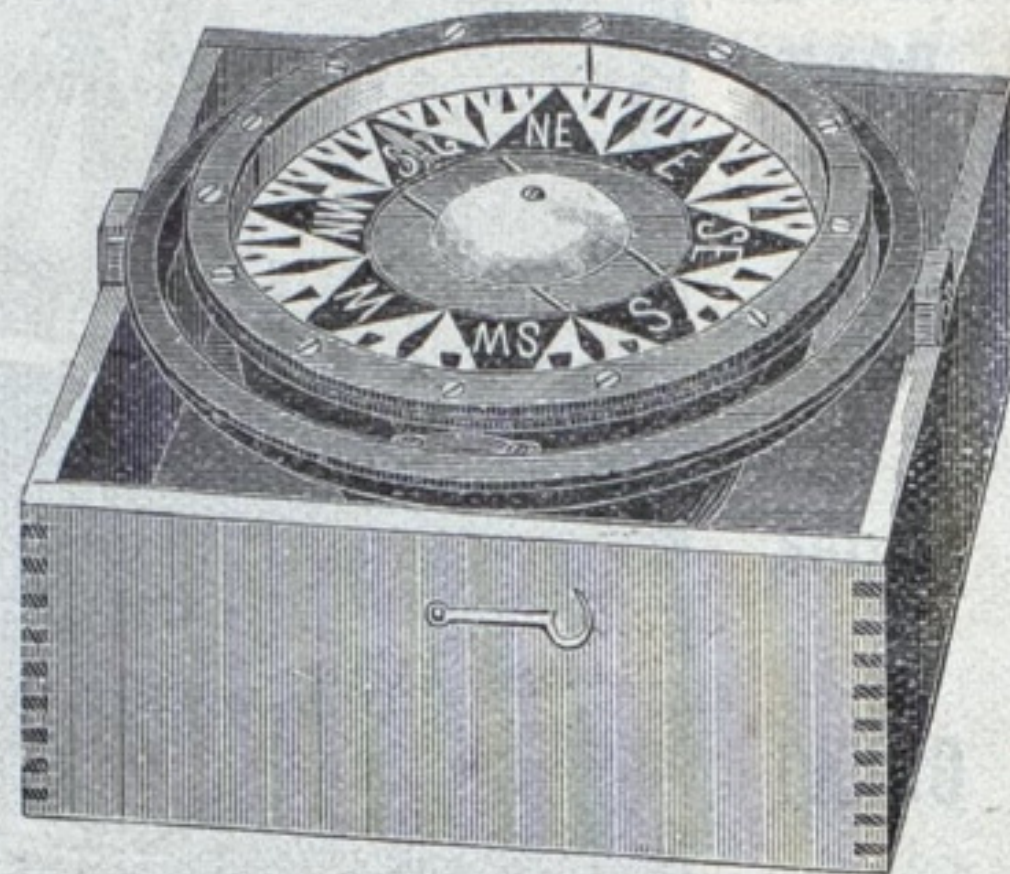
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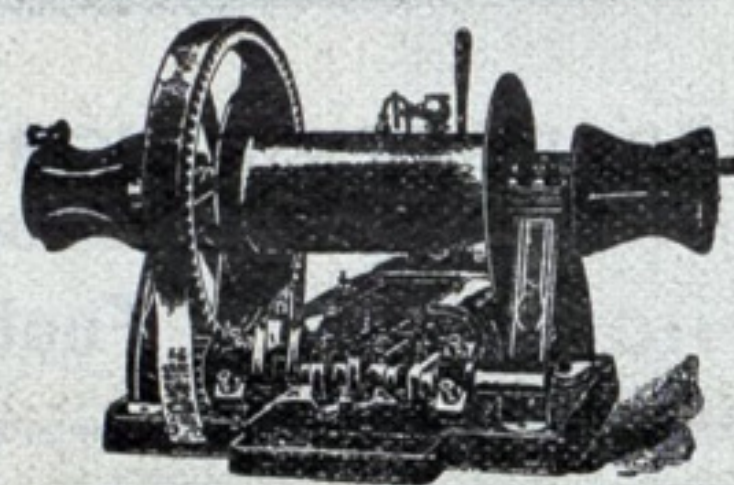
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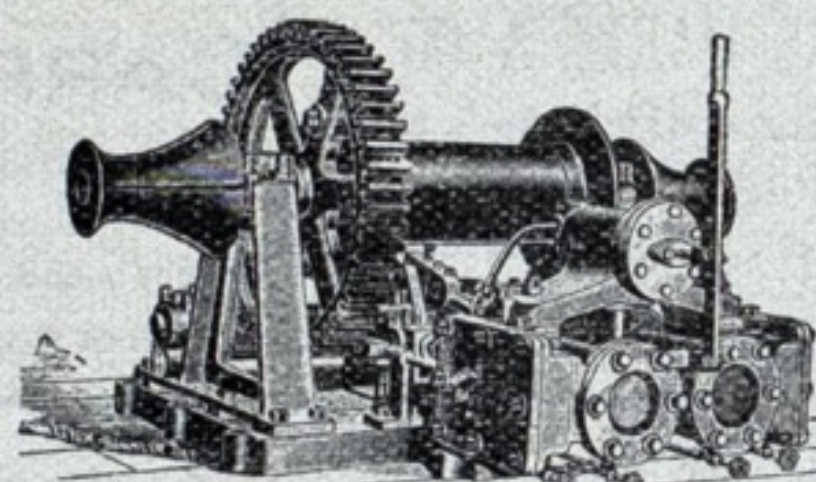
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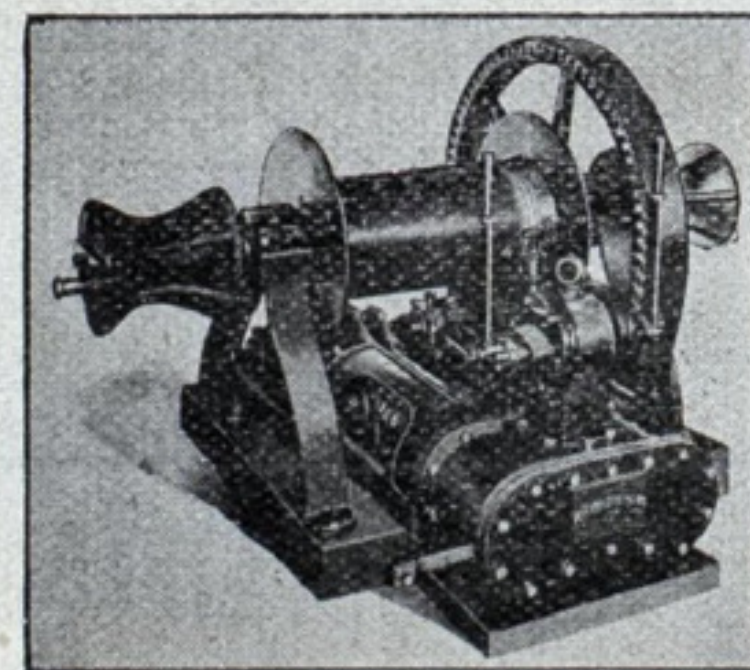


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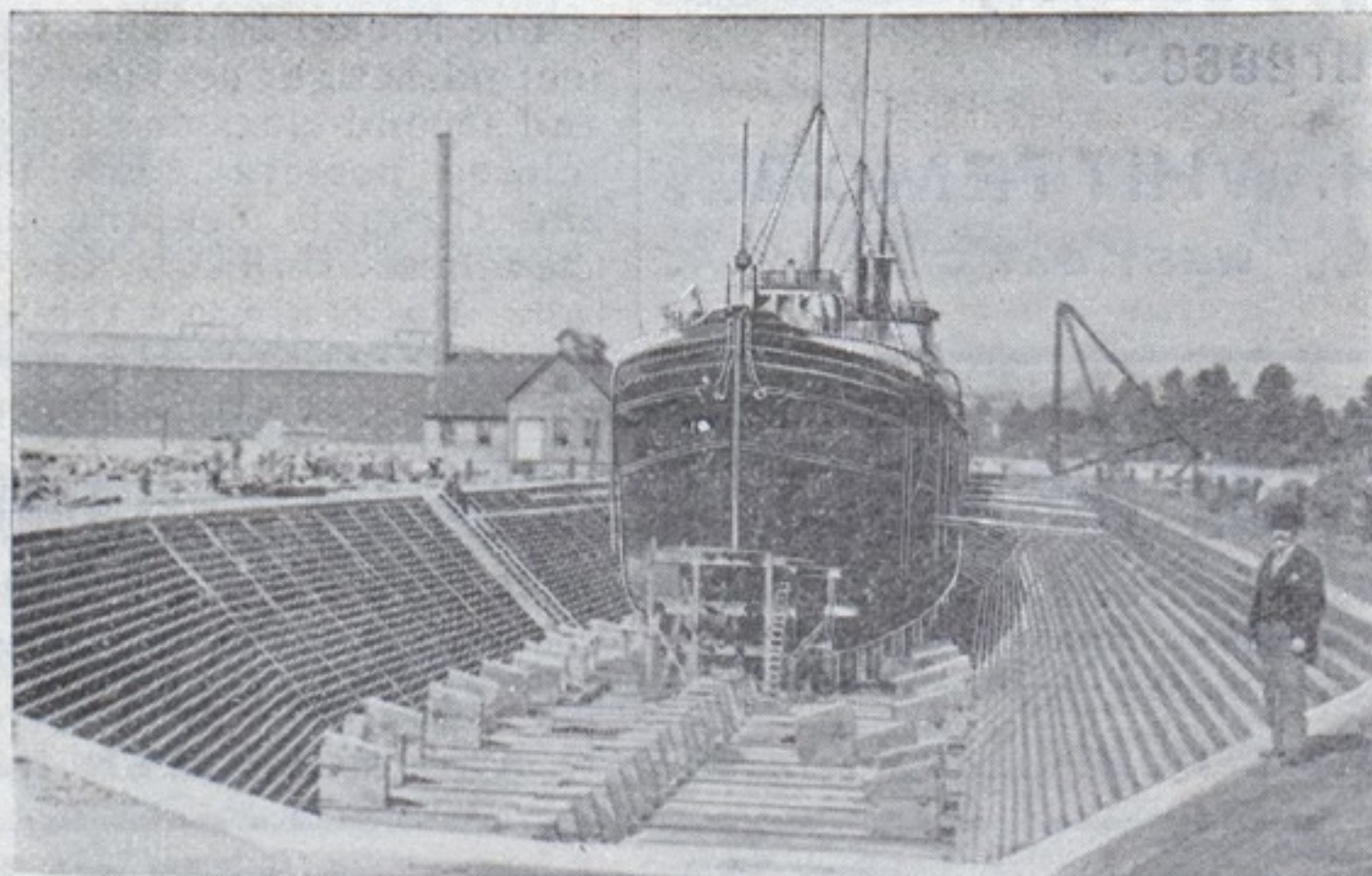
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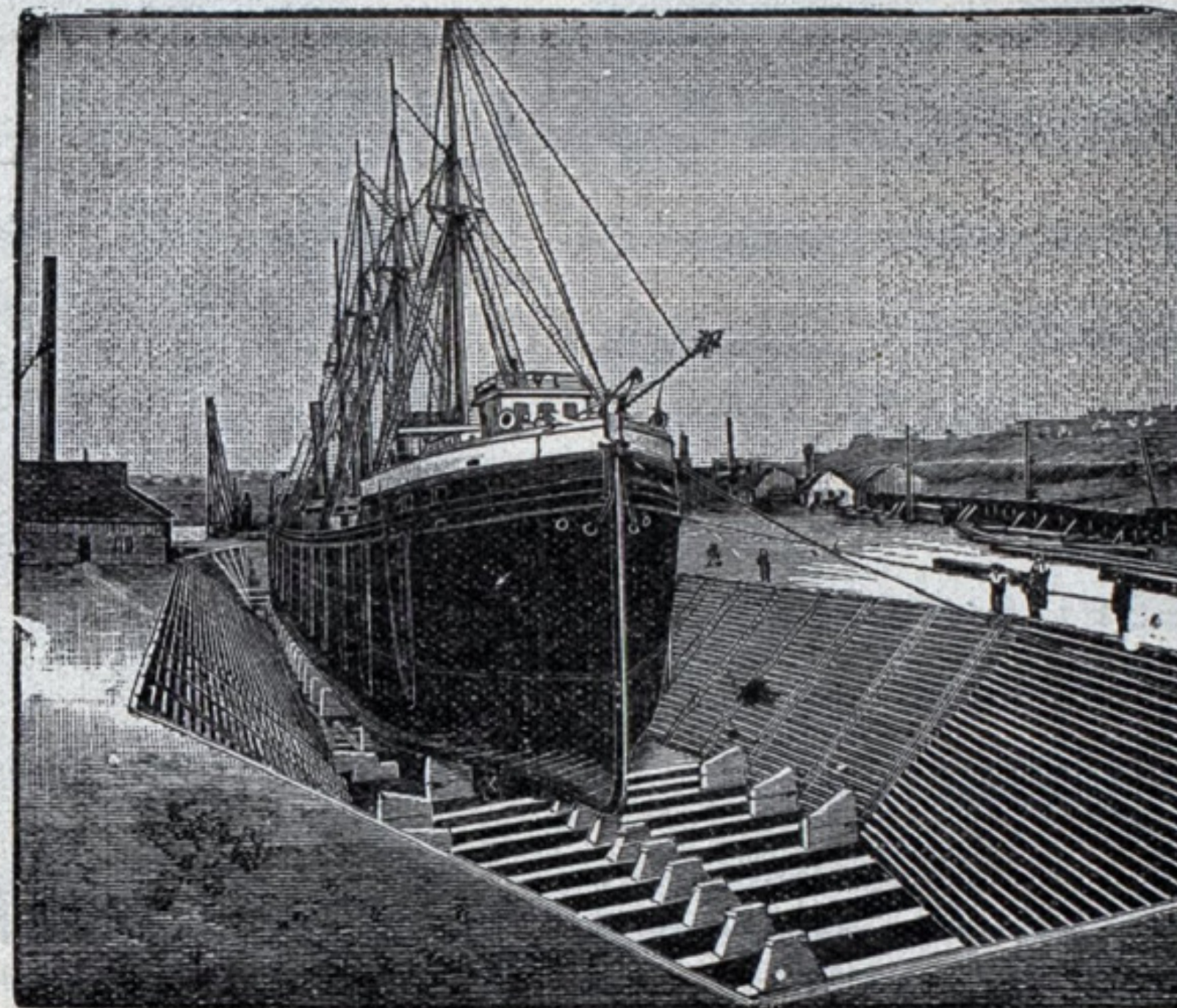
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